The Journal of the American Medical Association

Published under the Auspices of the Board of Trustees

VOL. XLIX. CHICAGO, ILLINOIS, AUGUST 10, 1907. No. 6.

Original Articles

THE INFLUENCE OF GONORRHEA AS A FACTOR OF DEPOPULATION.*

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That the birth rate in this country is surprisingly low will be admitted by all who have noticed the decreasing size of American families and familiarized themselves with the researches of prominent sociologists as to the cause of this national calamity.

This fact has been accentuated by Englemann, who believes that the birth rate in America is lower than that of any European country, except France, and who states that the birth rate of the American born population is much lower than that of France, and that the fecundity of American women is lower than that of any other country.

Cleveland devoted the major part of his presidential address at the Washington meeting of the American Gynecological Society to the destructive effects of venereal diseases on the female pelvic organs. He appointed a committee to investigate this subject and report next year. Especial prominence is to be given in this report to the influence of venereal diseases in causing sterility.

Ward insists that, in spite of the progress of gynecic science, the number of children to each marriage has decreased from 4.5 in the eighteenth century to 2.5 at the present time, and that, while voluntary "race suicide" is alarmingly prevalent, there is still that great multitude who, through no wish of their own, are childless and spend their time and money in seeking relief.

While there are many causes of sterility in both sexes, the object of this paper will be to discuss the influence of the gonococcus on the male and female generative organs as a depopulator of the human race. As the time limit for the reading of the several papers of this symposium is necessarily very short, I shall omit most of the discussion and the general argument and rely for the proof of my contention chiefly on the statement of what appear to be facts and on dry statistics.

At the outset it may be stated that the subject will be presented under the following heads:

1. The frequency of gonorrhea in the male.
2. The results of this infection in the causation of sterility.
3. The frequency and results of the gonococcic infection of married women and the relation of these results to sterility.
4. The practically incurable nature of these infections, except by surgical methods, as, while saving life, result finally in preventing further conception.
5. Sterilizing end results of the vulvovaginitis of little girls.
6. Influence of the gonococcus in the causation of abortion and premature labor.
7. Gonorrhea as a probable cause of extrauterine pregnancy.
8. "One child sterility."
9. The cause of much chronic invalidism which persistently inhibits conception.

One may state safely that gonorrhea is the most frequent of adult diseases. The lowest estimate which we meet in recent literature is that at least 75 per cent. of the male inhabitants of our cities between the ages of 18 and 28 have had or now have this disease. Its frequency is placed by many at a much higher rate, varying from 75 to 95 per cent. It is probable that the latter figure is more nearly correct than the former.

The curability of this infection is not assured short of six months' treatment and observation in the milder cases. In the severer degrees of infection, involving the posterior urethra and seminal vesicles, it is doubtful if a radical and permanent cure can ever be promised which will make the wife perfectly secure from gonococcal infection.

The statement of Noeggerath in regard to the latent powers of the germ of Neisser have been generally accepted by the profession. It is now held to be quite possible for the wife to be infected by a husband who honestly believed himself cured of an attack which occurred several years before his marriage and from which he had, for a long time, been free from any gross symptoms.

Wertheim has demonstrated that even in cases in which the husband has been assured by his physician that he is cured it is still possible for the excesses and excitements of the newly married state to revive into virulent activity latent gonococci which had been hibernating for years in the deep recesses of his generative tract. These, when deposited in the virgin soil of his wife's vagina, can cause a characteristic specific infection.

The pathetic part of this unexpected and heretofore misunderstood condition is that the innocent victim of the husband's early unchastity is accused of causing the infection. Believing himself free from the disease, he naturally thinks his wife has lapsed from virtue, acquired the disease from some one else, and infected him, when, in reality, it is one of his own unrecognized chickens come home to roost.

It was formerly believed that "in nine out of ten childless marriages the fault was that of the wife." It is now known that in a much larger proportion than was suspected the husband himself is sterile, and that in a great number of cases this sterility is caused by the effects of gonorrheal infection. Dr. Hagner, of Washington, a specialist in genitourinary diseases, in a recent paper on sterility in the male, states that, "as a net result of many investigations, it may be stated, in general, that in cases of unfruitful marriages the husband is the sterile member of the family in about one case in six."

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

According to Kehrer, the cause of childless marriages is nowadays sought much oftener on the side of the man. He found that in 96 investigated cases of sterility in man 63 had a history of gonorrhea with infection of the epididymis and prostate. Noeggerath found 8 unfruitful marriages in a series of 14 cases to be the fault of the male, and Gross, in 192 cases, found the male deficient in 18 per cent. Brothers places the responsibility with the man in 20 per cent. Reis says it is 30 per cent., and Kehrer, 31.5 per cent. Lier and Asher found that out of 424 childless marriages 169, or 40 per cent., were due to sterility of the husband. Vedder, of Christiania, in 310 cases, by including all cases of sterility in women due to gonorrhea acquired from their husbands, found the man at fault to the extent of 70 per cent.

The principal cause of sterility in men is stated to be bilateral gonorrheal epididymitis. Bengler, in 1898, found that among soldiers in the German army who had been married three or more years, 10.5 per cent. who had suffered from gonorrhea without epididymitis were childless. Of those having bilateral epididymitis, 41.7 per cent. were childless. Bengler adds that it will be seen from all statistics that epididymitis is by far the most common cause of sterility in the male.

From a consideration of the above statistics men are responsible, therefore, for from 18 to 70 per cent. of the sterility of the world, and, in the language of Hagner, the "principal cause of sterility in men is bilateral gonorrheal epididymitis." Still greater responsibility might justly be placed on the shoulders of these husbands who, through ignorance, thoughtlessness or unbelief, have infected their innocent wives and thus brought about conditions which have resulted in their unwilling or enforced sterility. Morrow has pointed out that gonococcal infection is a more potent factor in the production of involuntary "race suicide" than syphilis by the sterility induced in both sexes; but much more frequently in women, on account of the ascending destructive and incurable infection of the tubes and ovaries.

Bland-Sutton is correct when he asserts that gonorrhea is the chief cause of the sterility of prostitutes. Gonorrheal salpingitis, whether it results in pyosalpinx or tubo-ovarian abscesses or not, usually destroys the ciliated epithelium of the tube or so cripples the ovary as to render conception and normal gestation almost impossible.

Gynecologists do not profess their ability to restore a Fallopian tube, once infected with gonorrhea, to its normal condition. Sterility or some more positive and destructive condition is, therefore, the very common legacy bequeathed to the female victim of this disease. A specific endometritis must always be the cause of gonorrheal salpingitis.

The frequency of this infection was brought prominently to the attention of the profession by the report of the Committee of Seven on the Prophylaxis of Venereal Diseases in New York City. This report indicates "that nearly 30 per cent. of all venereal infections occurring in women in private practice in that city are communicated to them by their husbands." Noeggerath stated, in 1876, that, of every thousand married men, eight hundred have had gonorrhea from which a great majority of their wives have been infected. Another writer of large experience thinks that fully 70 per cent. of the women who came to his service for treatment were respectable married women who had been infected with gonorrhea by their husbands. Janet, in his "Social Defense Against the Venereal Peril," in speaking of its frequency, says: "If we compare from a social point of view the importance of gonorrhea with that of syphilis, gonorrhea is to syphilis as 100 to 1, not only from the standpoint of the number of persons attacked, but also from the standpoint of the gravity of the lesions and their perpetuity, . . . which to-day gives to the surgeons three-quarters of their work and conducts finally both men and women to sterility."

Noeggerath has expressed his belief that 50 per cent. of female sterility is caused by gonorrhea. Neisser places the proportion from this infection at 40 per cent., while Gruenwald, Kammera and Crolax report 53 per cent., 83 per cent. and 40 per cent. of endometritis, mesometritis and peritonitis, respectively, all of gonorrheal origin, as causes of sterility in the female.

The results of gonorrheal infection of the female pelvic organs are inseparably connected with the discussion of any and all phases of this question, and it is practically impossible for one who has written much on this subject to avoid repetition or to state old points in new or different language.

The phase of the gonococcus infection question which especially interests and occupies us to-day is its influence or power as a "depopulator." This influence is again shown in the great number of mutilating and unsexing surgical operations which are required to save the lives and restore the health of a large number of infected women. The oft-repeated statement is familiar to you all, that at least one-half of the abdominal operations of the world are necessitated on account of gonorrheal infection. While this statement is startling, the sad part of it is that it falls far short of the actual facts. Hummeiston states that 90 per cent. of his operations are attributable to this cause, some of them, however, being cases of mixed infection. Price declares that "in 1,000 abdominal sections for pelvic inflammation 95 per cent. were attributable to gonorrhea." Pozzi and Frederick state that their experience puts the proportion at 75 per cent. Mann and many other gynecologists hold that, as gonorrheal endometritis is nearly always the cause of pus tubes, for the complete cure of the patient, the practically incurable gonorrheal uterus must be removed also. It goes without saying that all these removals of the gonorrheal uterus or its appendages is the indirect cause of sterility, while the gonococcus is the primary and direct cause of all this class of mutilating and unsexing surgery.

The depopulating influence of this specific infection is seen again in the production of what has come to be known as "one child sterility." It is possible for a woman who has gonorrhea in the anterior portion of her birth canal to conceive and to give birth to a child. The child has, however, a very dangerous gauntlet to run to be born alive, as well as to escape ophthalmia neonatorum, which statisticians tell us is the cause of about 30 per cent. of the blindness in this country. In a previous paper on the effects of gonorrhea on the female generative organs it was stated that there is abundant testimony that specific infection frequently ascends to the pelvic organs after parturition, when this infection only existed below the internal os previous to labor.

The way seems to be opened by the parturient act, through slight traumatisms in the endometrium, for the lodgment, subsequent development and multiplication of these germs and their further ascent to the tubes and ovaries. Morrow declares that "after accouchement the tissues of the genital organs are in a peculiar state of inhibition and infiltration which offers to the gonococcus

a favorable soil for its proliferation, and that the aptitude of a gonorrheic woman for conception is often extinguished by the first pregnancy, the one child representing the sum total of her reproductive energy."

The pernicious influence of the go... us is again shown as a "depopulator" in the causation of many more abortions and premature deliveries than have heretofore been attributed to it. Sanger contends that "as many abortions are caused by gonorrhea as by syphilis." Noeggerath states that of 53 women, known by him to be suffering from the effects of gonorrhea, 19 aborted. Frughinsholz found that in 101 pregnancies occurring in gonorrheic women 23 aborted. Williams insists that 73 per cent. of all abortions are due to endometritis, which is without doubt chiefly caused by gonorrheal infection, when not due to puerperal sepsis.

While many authorities might be quoted in favor of this proposition, it is difficult to prove its direct causative effect. Without doubt modern writers believe that gonorrhea is, much more frequently than was formerly taught, the cause of abortion.

The causes of extrauterine pregnancy have never been definitely formulated and clearly stated in the text-books on obstetrics or gynecology, but it is claimed by recent writers on social diseases and abdominal surgery that gonorrheal salpingitis plays an important rôle in the etiology of this condition.

Modifications in the epithelial lining of the tubes occur in mildly latent cases which may arrest the descent of the ovum to its natural bed in the uterus and thus become directly responsible for its tubal development. To the extent that it is the cause of the death of the fetus, of mutilating op... ions and of fatal results to the mother, just to that extent it becomes another factor in depopulation. M. Paul Petit sums up the argument as follows:

> If this nuptial microbe, apparently benign, is sufficiently attenuated so that it does not produce peritonitis—does not shut the tube at either of its ends (closure fatal for the race, but salutary for the woman)—if, nevertheless, it happens that its delicate cells have lost their vibratile cilia, charged to secure the advance of the fecundated egg, this is arrested in the channel, through which it can not pass, and notwithstanding the heroic efforts of nature to produce a compensatory hypertrophy, the drama still proceeds. In the place of becoming enfeebled, the virulence of the microbe becomes cataclysmic, extrauterine pregnancy, much more common than is usually supposed, is constituted, the infant dreamed of, still in its embryonic state, has become for its mother a malignant tumor, and if it does not kill her suddenly by internal hemorrhage—when in apparent perfect health, which is fortunately quite rare—too often it offers her to the reparatory knife of the surgeon, and in the more fortunate cases immobilizes her for many months on a bed of suffering.

We have the authority of Jacobi and Currier for the statement that the "vulvovaginitis of little girls," which is generally of gonorrheal origin, has the effect to retard and to frequently prevent altogether the normal development of the uterus and its appendages. Women with undeveloped or infantile uteri or ovaries are not only great sufferers from amenorrhea and dysmenorrhea, but are, at the same time, unable to conceive, or, if they do, to produce a live child. This condition amounts practically to sterility, and its first cause is gonorrheal infection during infancy or childhood. Recent text-books on pediatrics refer to the vulvovaginitis of little girls as the most frequent and troublesome of institutional diseases, and that in the great majority of cases they are caused by gonorrheal infection.

It is not, of course, suggested that their infection resulted from any sexual relation with the opposite sex, but was communicated from one to another in a great variety of ways.

Caille gives an example in his treatise of the spread of this infection in a public institution in New York harboring 850 children; 130 cases of so-called leucorrhea developed, in two months, which proved, on investigation, to be gonorrheal in nature. Much more similar evidence could be produced if there was time to read it.

In addition to the above charges in the indictment against the "nuptial microbe," as M. Paul Petit calls it, we have the large number of indeterminable cases where no surgical operations are performed, where no organs necessary to procreation are removed, and yet the women are living lives of chronic invalidism, which too frequently means lives of chronic gonorrheal infection, the ultimate effect of which is to inhibit any further conception.

The human race is then "depopulated" to the extent that children are denied to these chronic invalids. Their number it is impossible to determine, but, arguing from a permissible analogy, the charge against the gonococcus gains enormous and blacker proportions. It may be said to have fairly earned the title of the "chief moral and physical pest of our age," and, in contradistinction to tuberculosis, might be called the "great black plague."

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SYPHILIS AS A CAUSE OF DEPOPULATION AND RACE DETERIORATION.*

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The effects of syphilis are as complex and difficult to ascertain as the effects of gonorrhea are definite and directly attributable to this disease alone. For example, gonorrhea causes rheumatism by specific inflammation of the joint, while syphilis causes paresis by some vague means of which we are none too sure, and with the aid of certain other factors which we can not definitely ascertain, but which make one race far more vulnerable than another.

In the matter of heredity, gonorrhea destroys the race either by sterilizing a potential parent or by blinding a new-born infant; while syphilis leaves the parent neither sterile nor impotent; the child it may kill or brand with indelible disfigurement, or it may simply leave him liable to destruction by other agencies, notably by tuberculosis. Finally, the problem of race deterioration by syphilis is still further complicated by the alcoholism, the debauchery, and the moral perversion that so often complicate the disease in the parent and join with it in degenerating the child.

Such being the case, let us, from as firm a foundation as possible and beginning with the effects of syphilis *per se*, consider the disease briefly as it relates to the individual—more in detail as it relates to his or her descendants.

ACQUIRED SYPHILIS.

According to the United States Census of 1900,[1] about 3,000 deaths directly attributable to acquired

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Vol. III, Part 2. The round figures given are obtained by adding 1,591 deaths from venereal disease to 702 from locomotor-ataxia and 1,303 from paresis and substracting the 675 cases of hereditary syphilis.

syphilis occur in the United States every year. This is about 3 in every 1,000 deaths, and puts syphilis in the class with malaria, cerebrospinal meningitis, septicemia, alcoholism, diabetes and appendicitis.

The mortality statistics of life insurance companies tell the same story from a different point of view. The estimated mortality of syphilitics, according to the report of the Actuarial Society of America,[2] is 133 as compared with 100 non-syphilitics. Thus the acquisition of syphilis by the average American decreases his expectancy of life by about one-third. So much for mortality.

As a cause of inefficiency syphilis stands high. I have tabulated some 2,500 cases of syphilis in the better class of patients, and find that about 4 per cent. of them have locomotor ataxia, a little over 1 per cent. have paresis, and an indefinite number more are debilitated by various other manifestations of the disease.

The Surgeon-General's report for 1905 shows that in the United States Army syphilis stands ahead of every other malady as a destroyer of careers, having caused, in the year 1904, 166 men to be discharged from the Army; whereas tuberculosis caused a loss of only 101 men. This fact alone would be enough to mark syphilis as one of the scourges of the human race. There are more soldiers in the United States Army rendered permanently unfit to follow their profession as a result of this disease than of any other.

In comparison with these statistics, referring to our own countrymen, the quotation of those obtained by foreign observers is, I believe, of less value; yet it bears out the same thesis and adds a few suggestive details. According to the figures collected and compiled by Blaschko in Germany and Fournier in France, it would appear that from 5 per cent. to 20 per cent. of the male inhabitants of the larger European cities are infected with syphilis, though the disease is less prevalent in the smaller towns and in the country districts. Syphilis is at least four or five times more frequent in men than in women.

HEREDITARY SYPHILIS.

The transmission of syphilis from parent to unborn child has long been recognized, though the method of transmission has formed a subject of warm debate. But the fact alone interests us. The disease may be transmitted to the fetus *in utero* and may work three results:

1. It may destroy the fetus and cause its abortion.
2. It may kill it at about the time of birth—a short time before or after the event.
3. The child may be born alive, but bear evidences of the disease, or may develop these weeks or months or years later.

Abortion, still-birth (or death in infancy) and syphilis of the child are, therefore, the three classes of hereditary syphilis. To these we must add the very imminent danger to young children from parents infected after their birth.

According to the statistics of Fournier, the mortality ascribable to hereditary syphilis in hospital practice reaches 85 per cent.; that is to say, 85 out of every 100 children born of actively syphilitic parents die either before birth or shortly thereafter. In private practice, on the other hand, the mortality falls as low as 60 per cent., and, when the mother is apparently sound, but the father obviously infected, as low as 28 per cent.

The statistics of individual cases are still more shocking. In one instance (Ribemont-Dessaigne) a woman became pregnant nineteen times only to lose eighteen of her children by abortion or still-birth; a single child survived. And Fournier has even found it possible to collect a consecutive record of 157 births with 157 deaths—every single one failing to survive.

This so-called "polymortality" is the great stamp of hereditary syphilis. But such statistics are derived from cases of recent or of neglected syphilis. They represent conditions which are found in this country only under relatively exceptional circumstances of ignorance and over-population.

Let me hasten to add for the benefit of my non-medical listeners that well-treated syphilis ceases to be transmitted to wife or children within a very few years. Yet the United States Census of 1900, taking no account of miscarriages—although these form about one-half of syphilitic mortality—reports 675 infants dead of hereditary syphilis in the first year of their lives.

Apart from locomotor ataxia and paresis, more than one-half the deaths due to syphilis in the United States to-day occur in children less than one year old.

Personal records of office cases, though not very large, express fairly accurately the dangers of hereditary syphilis among fairly intelligent people and elucidate certain important points in regard to this inheritance.

Among 27 patients who acquired syphilis when married, or who married within a year after acquiring it, 25 infected their wives (or husbands). Of those marrying in the second year of the disease, 10 proved infectious, 4 not so. In the third year, 4 were infectious, 16 not so. In the fourth year one was infectious 4 (and probably many more) not so. Beyond this I have no records; but of the hundreds (literally) who have married during the fifth year of the disease, only 2 proved infectious, while there is a single alleged infection in the seventh year.

Moreover, in 41 cases the party of the second part was infected during the first year of exposure (almost always within the first few months). Only once was infection delayed one year until after the birth of a healthy child, who was last seen in perfect health at the age of 7.

Thus the danger of marital infection is instant and the chances for it are at least 12 to 1 during the first year of the disease, 5 to 2 in the second year, 1 to 4 in the third year, and all but nothing after the fourth year —whether the patient has been well treated or not. So much for the danger of transmission in matrimony. The danger to the child, the product of matrimony, is greater.

Fournier states that of 90 women infected within a year of the chancre in the male, 50 aborted, 38 bore children who died in infancy, and only twice did the first born live.

To these figures let me add my own. They are small in comparison, yet they strike closer home, inasmuch as they are a home product, not an importation, and derived from an office, not a hospital practice. Hence they represent at least a fairly intelligent class of patients. Yet the index of nocivity among these infants, i. e., the number aborted, killed or at least infected by syphilis, is simply shocking.

Among 43 women innocently affected with syphilis in matrimony and who bore children after such infection, only 2—think of it, only 2—escaped bearing at least 1 syphilitic child; and this exception is fully compensated by the 3 who, before realizing they had the disease them-

2. Personal communication by Dr. W. M. Brosa.

selves, infected a child whom they had previously brought into the world healthy.

Of the infecting 41

23 bore 1 syphilitic child (or fetus), and 5 bore healthy children later.
8 bore 2 syphilitic children and 6 bore healthy children later.
4 bore 3 syphilitic children and 2 bore healthy children later.
2 bore 4 syphilitic children and 2 bore healthy children later.
3 bore 5 syphilitic children and no others.
1 bore 8 syphilitic children and 6 healthy ones.

41 86

The last was the poorest and most ignorant of the lot: she should be really classed as a hospital case. Doubtless many more of those who bore but one syphilitic child bore healthy children after they had passed from my treatment and observation, just as many of their sisters who acquired syphilis without a husband have gone through their treatment at my hands and then married and borne perfectly healthy children.

Why this difference? Why does the unmarried syphilitic woman so commonly become competent to bear healthy children, while syphilis of the wedded victim almost inevitably impairs the health or destroys the life of at least one child?

The difference lies in knowledge and the lapse of time. The innocent wife does not realize she is diseased until she brings into the world her first syphilitic child; does not perhaps realize it even then—witness the frequency of multiple syphilitic heredity—but the woman forewarned and forearmed is in little danger. My statistics enforce this point: In 37 cases the interval between infection of the mother and the birth of the first syphilitic child (or fetus) is known. In 32 it was a year or less, thrice between 1 and 2 years, and twice at 2½ years. On the other hand, the interval before the birth of a healthy child was twice 2 years, ten times 3 years, twice 5 years, once 7 years and once 10 years.

In order to interpret these figures more clearly, let me invite your attention to the charts founded on them and arranged to show the parallel between the danger to a wife from an infected husband and the danger to an unborn child from an infected mother.

Chart 1 compares the duration of matrimony before infection was transmitted to the wife with the duration of the mother's disease before it was transmitted to an unborn child as calculated by the first birth or miscarriage. The lines, you note, run practically parallel: the infection is immediate.

Chart 2 compares the duration of syphilis in the husband at the time that he married and infected his wife with the duration of syphilis in the mother at the time she ceased to bear syphilitic children. The lines again run parallel; and, as Chart 1 is calculated to illustrate the instant infectiousness of early syphilis, Chart 2 is calculated to show its gradual dying out.

Chart 3, on the other hand, shows the opposite side of the picture—the chance of avoiding infection—and is a comparison of the duration of syphilis in the man before marriage to a woman whom he did not infect with the duration of syphilis in the woman before the birth of her first healthy child. The sharp rise at the third year forms a most graphic contrast with the equally sharp fall in Charts 1 and 2, and shows that, whether for wife or for child—and in some degree independent of the treatment—the infectiousness of syphilis falls off sharply in the third year. The latter part of Chart 3 is traced in interrupted lines, because the few recorded cases here merely represent the fact that, as the patients become well, they no longer return for observation, excepting the meager few whose disease continues more fierce than the average. These scanty data have no statistical value.

From this jumble of statistics I wish to draw just one conclusion, viz.: Syphilitic marital infection and syphilitic heredity are appallingly frequent in the first two years of the disease, but diminish rapidly thereafter, especially if the influence of time is fortified by proper medical care.

LATE HEREDITARY SYPHILIS.

The child who survives in spite of a hereditary syphilitic taint may develop symptoms of the disease at birth or not until many years thereafter. But, even though these syphilitic symptoms are controlled by appropriate and skilful treatment, there remain certain developmental peculiarities which attest to the experienced eye the presence of a syphilitic heredity and some of which impair the child's future usefulness as a citizen.

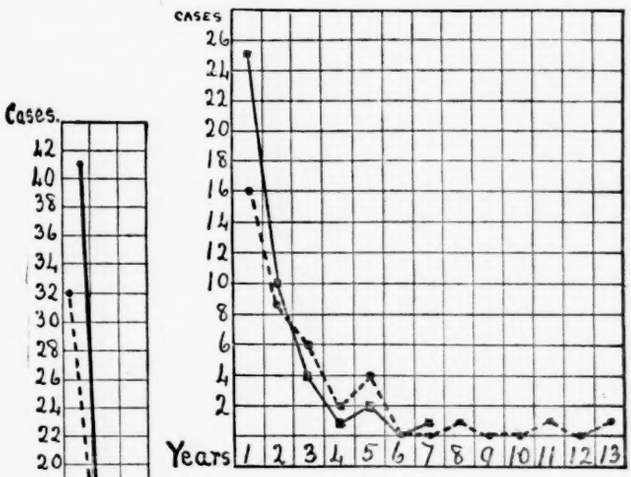

Chart 2.

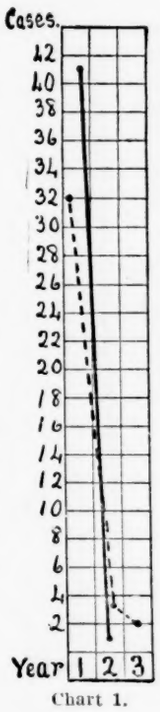

Chart 1.

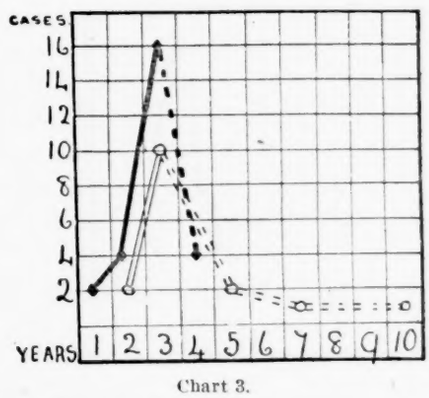

Chart 3.

Chart 1.—Beginning of infection; comparing duration of matrimony before wife becomes infected with duration of wife's disease before unborn child becomes infected. Solid line—husband to wife; broken line—mother to child.

Chart 2.—Duration of infection; comparing duration of syphilis in husband at time of infecting wife with duration of syphilis in wife at time she ceased to bear syphilitic children. Solid line—age of infectious syphilis in husband (to wife); broken line—birth of last syphilitic child to wife.

Chart 3.—Beginning of non-infection; comparing duration of syphilis in man before marriage to woman he did not infect with duration of syphilis in the woman before birth of first healthy child. Single line—age of non-infectious syphilis in husband; double line—birth of first non-syphilitic child (to mother); broken lines—statistics incomplete.

Thus the later evidences of hereditary syphilis may be separated into three classes: 1, Active lesions of the disease; 2, evidences or scars of healed syphilitic lesions; 3, dystrophic conditions attributable to impaired or disordered nutrition.

Of these classes, the first, though the most characteristic, is the least common; the second, almost as typical, is more frequent; the third, though the commonest of all, is so little typical as to be a constant source of confusion.

1. Instances of the first class, the active lesions, we need not enumerate.

2. Striking and familiar instances of the second class are Hutchinson's triad (viz., interstitial keratitis, deafness and a peculiar deformity of the permanent upper, central incisors), scars on the skin, perforation of the palate, chorioretinitis, natiform skull, broken-down nose, saber tibia, etc.

3. Instances of the third class are not lacking; but they should be interpreted with the greatest care and be accepted as evidence of syphilis only when seen in connection with other more definite signs of the disease. For example, the victims of hereditary syphilis are usually undersized and poorly developed in muscle; they reach puberty late; the men are relatively beardless. Yet it were manifestly absurd to conclude that every individual showing these characteristics is a heredo-syphilitic. Every medical man here can call to mind innumerable exceptions to such a rule; or, I should say, can call to mind more exceptions than exemplars.

The same holds good of many other deformities. The vaulted palate, the hare-lip, the knock-knee, the club-foot, as well as the grosser malformations, such as dwarfism, monstrosity, idiocy, imbecility, etc., may indeed result from the debilitating effect of hereditary syphilis, but they are as often due to other causes. Such a statement may sound obvious to those of you who are not aware of the lengths to which European syphilographers —especially the French—go in the effort to prove syphilis the fount and origin of every hereditary defect.

As a matter of fact, the unbiased practitioner is far more often impressed by the absence of congenital deformities in syphilitic infants than by their presence. It is surprising that a disease so destructive in its activity should inhibit normal development so little. Generally speaking, one may accept the rule that hereditary syphilis spends its force on the infant. If it escapes with body and brain intact, it is likely thereafter to remain as sound as its parent—perhaps even more so. What, then, becomes of the surviving children of syphilitic parents? They may be divided into three classes:

1. Some are not syphilitic or diseased in any sense. These are the children of parents whose disease has been watched and treated intelligently. Among the upper classes such healthy children easily outnumber the diseased, and even among the poor and ignorant of our large cities they almost equal them.

2. Some are syphilitic and continue to have relapses of syphilis. Such relapses, though most unusual, are apt to appear at the time of puberty. Edmond Fournier[3] alleges that they may result in transmission of the disease even to the third generation. This thesis, though not accepted by every syphilographer, is all but proved. The names of Taylor, Fournier and Hutchinson lead those who accept it, while Tarnowski, Barthélemy and some German authors incline to it. But the cases are extremely rare and are bred in such an atmosphere of neglect, ill treatment, privation and debauch that the hereditary syphilis seems almost an incident rather than a sole cause of the resultant degeneracy.

3. The greater number of syphilitic children who survive depend for their future health entirely on the hygienic and medical treatment they receive in infancy. If intelligently handled, the stunting, disfiguring and enfeebling influence of the disease is overcome in the majority of instances. But if neglected or if so overwhelmed by the disease that no treatment can cure them before their developing tissues are permanently scarred, their vitality permanently impaired, they are doomed to grow up defectives and peculiarly subject to rachitis and tuberculosis.

The relation between rachitis and syphilis has long since been determined. Parrott believed and taught that every rickety child was syphilitic; but subsequent investigation has clearly shown that this is not the case, that syphilis is only one among many potential, debilitating causes of rickets. Indeed, when I was a medical student in New York City, a decade since, hereditary syphilis was common enough in our clinics, while a case of rachitis was quite unusual.

The same is true of tuberculosis. Sargent[4] has recently collected much evidence in the matter, and, with a wealth of authoritative quotations, enforces his conclusions that "la syphilisation du père a préparé le terrain pour la tuberculisation du fils"—"syphilis in the father prepares the soil for tuberculosis in the son. This aphoristic statement expresses the actual condition not quite accurately. It is necessary to distinguish as follows:

1. Syphilis in the father, if severe or if allied with other debilitating influences, such as drink, deprivation or debauch, prepares the father's own soil for tuberculosis.

2. Syphilis transmitted from parent to child—hereditary syphilis—exercises the same predisposing influence magnified by the difficulty of eradicating the disease from the vulnerable tissues of the new-born.

3. But the non-syphilitic child of a syphilitic parent is not predisposed to tuberculosis, unless by such privation or neglect as would so predispose it in any event.

Since a hereditary tendency to tuberculosis and rickets is by no means bound up with an inheritance of syphilis, we are faced with the question, How often and in what degree does syphilis predispose to rickets and tuberculosis? I doubt if the question can be directly answered by statistics. Perhaps the nearest we can come to an answer is the parallel between the influence of hereditary syphilis on rickets and tuberculosis, and that of acquired syphilis on tabes and paresis.

Some evidence may be deduced from the effects of syphilis on different races, which may be briefly summarized as follows: In many regions of Asia Minor, Egypt, the Balkan States and other Oriental lands syphilis is endemic and is found in every generation of a family and in almost every family of a village or town. The children in these countries are often tuberculous, but the adults are never, or practically never, either paretic or ataxic. The obvious inference which has been drawn from these facts is that paresis and ataxia, as seen in the civilized communities of Europe and America, are due not to syphilis alone, but to "syphilis and civilization," as Krafft-Ebing puts it; while the absence of these diseases and the relative frequency of rickets and tuberculosis among syphilitic Orientals show that, in the main, these latter diseases are the appanage of untreated, neglected syphilis. By proper care they can almost always be prevented.

The influence of syphilis as a cause of depopulation and race deterioration may, therefore, be summed up as

3. Syphilis Héréditaire de seconde Génération, Paris, 1906.

4. Syphilis et Tuberculose, Paris, 1907.

follows: *In the individual*, syphilis causes in the United States to-day 3 per 1,000 of the deaths, and in the Army more discharges for permanent disability than tuberculosis. According to the statistics of life insurance companies, it decreases the expectancy of life by one-third. *In his descendants*, syphilis is the great cause of infantile polymortality, even among the better classes. The infant who survives a hereditary syphilis is likely to fall victim either to relapse of syphilis or to rickets or tuberculosis, even though submitted to proper medical treatment and kept in proper hygienic surroundings. His efficiency as an adult citizen may be more or less impaired; but the extent of this impairment depends on the intelligence with which his disease is handled in infancy, and the debilitating influences to which he is then subjected.

ARTIFICIAL CHILDLESSNESS AND RACE SUICIDE.*

J. NEWTON HUNSBERGER, M.D.
SKIPPACK, PA.

Of all fundamental conditions of society none is of greater moment than that of the propagation and preservation of the human race. Beside it all other sociologic and material conditions fade into insignificance. For it is self-evident that only a few decades without a single birth would mean practically the depopulation of the entire earth, and though this will probably not occur, yet we are undoubtedly facing a diminishing birth rate, especially among the better class of American-born citizens.

I will not tire you with statistics, for they are often incorrect and usually misleading; but I would ask each one of you to compare the number of children born twenty years ago in your immediate neighborhood with the number born to-day, and I feel sure that you will note a decided reduction.

Fifteen years after I was graduated in medicine there were inquiries made of the one hundred and twenty-four members of the class. Eighty-one replied. Of this number sixty-four had been married and had had born to them one hundred and five children. Comment is needless. For we all know that a birth rate so low as this, if it held good among all classes, would mean the rapid depopulation of any community. And coming from physicians, who should know, if any one does, what it all means, it seems especially deplorable. Possibly we would best cast out first the beam from our own eye before attempting to remove the mote which is in our brother's eye.

In Massachusetts, where vital statistics are accurately kept, the decline of the birth rate among those families who have lived there for generations has been alarmingly rapid. In inquiries made by the colleges regarding the number of offspring which the various classes, twenty-five years after graduation, of both sexes, had, the reports all show an exceedingly small percentage of children. But why reiterate what every thoughtful physician knows, that the birth rate among the class best equipped to have and to rear children is very much lower than it should be.

I am aware that among the very wealthy, with some exceptions, families are small, but as they form such a small percentage of the entire population they need not be seriously considered. It is also true that among the very poor and shiftless we frequently see large families, but they again form but a small percentage. It is in the great middle class, the class from which have sprung, and from which will continue to spring, the ablest, the cleanest and the best men and women, the "leaven which leaveneth the whole lump," and who constitute the backbone of our national supremacy; in this class, I repeat, the birth rate has fallen off most markedly. Do we understand and fully appreciate what this means?

It means that the curse of selfishness is sapping the very roots of life. It means the decay of spiritual ideas and the death of true patriotism. It means the breaking up of homes. It means the divorce court and the triumph of sensualism. The joys as well as the sorrows of parenthood do more to redeem men and women than all the religious creeds in the universe. Children are the only true missionaries; the only beings really Christ-like. "Except ye become as one of these little ones, ye shall in no wise inherit the kingdom."

The responsibility which children bring inculcates self-denial and self-restraint. Thinking for others becomes a habit. Those who are childless, through their own wrong doing, do not know the pleasures of self-denial, their natures become narrow, selfish and warped and their souls atoms. It is a truism that from large well-born families come the best citizens. They early learn self-reliance; are free from false sentiment; are tolerant and helpful to each other, and lose the egotism and self-consciousness so commonly seen in an only child. Luxury seldom enters into such homes. Satiety is unknown with its blasé expression. Want may even show his gaunt form. But in spite of all this, there are more manly men and womanly women found in large families and more real happiness, than is ever dreamed of by a childless couple or where a single child is surfeited, stunted and spoiled by needless luxury and display. The large families of our forefathers were big factors in the building of our nation; while we are slowly but surely drifting to the shoals of a decreasing birth rate, on which France has already stranded her best hopes, with its selfishness, worldly prudence and sensualism for which it stands sponsor.

We are not brought into this world for ourselves alone, nor is it intended that we should go out of it without leaving some one to fill the place we vacate. Humanity has placed a heavy mortgage on each one of us and demands satisfaction, or she will surely exact a penalty. And is it a hard mortgage to satisfy? Is a little bundle of pink and white helplessness, as it cuddles its warm body against ours, so very objectionable? And is the clinging clasp of its tiny hands so hurtful? Is there anything in this world—position, wealth, honor or achievement, that can balance it? Listen to William Allen White:

> In every heart that is not a dead heart, calloused to all joy or sorrow, some little child is enshrined—either dead or living—and so child-love is the one universal emotion.
>
> A child's soul is such a small thing, and the world and the systems of worlds, and the infinite stretches of illimitable space, are so wide for a child's soul to wander in, that, sane as we may be, stolid as we may try to be, we think in imagery, and the figure of little feet setting off on the far track to the end of things, hunting God, wrings our heart-strings and makes our throats grip and our eyelids quiver.
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> And then a child dying, leaving this good world of ours, seems to have had so small a chance for itself. There is something in all of us struggling against oblivion, striving vainly to make a real impress on the current of time, and a child,

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

dying, can only clutch the hands about it and go down—forever. It seems so merciless, so unfair. Perhaps that is why, all over the world, the little graves are cared for best. It is to the little graves that we turn, and not to the larger mounds, in our keenest anguish, to the little graves that our hearts are drawn in our hours of triumph; and so the child, though dead, lives its appointed time and dies only in the fulness of its years. The little shoes, the little dresses, the "little tin soldiers, covered with rust," and the memories sweeter than dreams of a honeymoon, these are life's immortelles that never fade.

There is a certain proportion of marriages unfruitful through no fault of the individuals. These, however, constitute a comparatively small percentage and are the exception. As a rule, the childless couple is childless, and the family with one or possibly two children is small, because means are used to prevent or destroy the product of conception. We frequently see one or possibly two children born quite promptly after marriage and then child-bearing suddenly ceases. It is plainly evident what is taking place.

What reasons and what influences are at work which produce such unfortunate conditions? They are many and varied: The extra expense which children bring, probably being as potent a factor as any, coupled with the selfishness that refuses to deprive itself of any pleasure or luxury for the child.

There are many young men in the professions or in business who will not marry until financial success is absolutely assured, or if they do, refuse to be burdened with large families. Many of the better class of skilled laborers with good wages refuse the little sacrifices necessary to rear a family. Girls who had been earning their own living previous to marriage, and who often get erroneous ideas of life through their associations, frequently refuse motherhood. Another factor is the living in boarding houses and flats where children and dogs are not allowed. It is almost considered vulgar and bourgeois in a certain class, to have a good sized famliy. How the mother of to-day pities and sympathizes with her daughter if she should be so unfortunate as to have a baby, and is not above instructing her how to prevent a repetition of the accident. Many, many reasons, but never a good or valid one, and all of them, every one of them, based on selfish motives!

There are also far-reaching influences which play their rôle: The so-called emancipation of women, which has come to pass during the last century, with its freedom from medieval slavery. This new freedom has been perverted and misconstrued, to mean a relief from the duties and obligations, which, though they may appear burdensome, women can not expect to escape. And while woman's sphere is not alone to bear children, yet if she refuses her God-given part toward propagating the race, she is worthy of nothing but scorn—she is not womanly.

Though the law may sanction and the church bless, yet such an one just as truly prostitutes the marriage bed as the woman of the street. The violent opposition in certain quarters to houses of ill-repute, and the time spent on devising ways and means to regulate or abolish them, would better be directed in other channels nearer home. There are very few of us fit candidates for a stone thrower's license. The inmates of these houses are usually deflowered long before they enter the portals, and the maudlin sympathy of our specialists would best be withheld until occasion arises when it can be worthily bestowed. It is a well-known fact in the underworld that houses of prostitution could not exist if it were not for the patronage of married men. Undoubtedly, one of the reasons of this unfortunate condition is the objection on the part of the wife to bear children, while the cold-blooded devices to prevent conception simply drive their husbands from them.

Ah! you divorce investigators, you are afraid to call a spade a spade, or else are ignorant of conditions as they exist, or you could easily locate a large percentage of the trouble. Though I believe the woman is oftenest at fault in preventing conception, yet the husband is usually more than a willing accomplice in the crime, and for reasons less valid than his wife's. Such a man marries only for the selfish gratification of his own passions and is hardly on a par with a brute.

The world does homage to the man who works and to the soldier who fights, but to a far greater extent do the right-thinking men and women do homage and reverence to the woman who performs her great duty, and no greater or more ennobling one was ever given to woman than that of propagating her kind. In Rome's halcyon days it was the mother, and she who was about to become a mother, who were given precedence and homage savoring of idolatry. While this worship continued Rome was superb, unbeaten, matchless. When her affections and homage were transferred to mistresses and vestal virgins her boasted supremacy became a byword.

It has been proved that among families which can properly have children the population will not materially increase, if there are fewer than four children. Three children in a family are insufficient when allowance is made for those who do not marry, for those who physically can not have children, and for the children that die. This is a most conservative estimate. While I do not believe that the best interests of mankind are served by rearing children with a rapidity that undermines the mother's health or bringing children into a life of abject poverty, wretchedness and disease, yet the hideous vice and crime which marks the prevention and destruction of the product of conception must be abhorrent to every right-thinking man and woman. And, mark you, this not the vice of the woman of the street alone, but is practiced by what appear to be the best people of our land, not excepting the clergy. It may be the result of thoughtlessness; it may be done through a perverted sense of right and wrong, or it may be moral obtuseness. But whatever be the motive back of the act—the act itself is a crime, and nothing can ever give it the garb of respectability.

Just a short quotation from President Roosevelt in conclusion:

If a man or woman, through no fault of his or hers, goes through life denied of those highest of all joys which spring only from home life, from the having and bringing up of many healthy children, I feel for them deep and respectful sympathy—the sympathy one extends to the gallant fellow killed at the beginning of a campaign, or the man who toils hard and is brought to ruin by the fault of others. But the man or woman who deliberately avoids marriage and has a heart so cold as to know no passion, and a brain so shallow and selfish as to dislike having children, is in effect, a criminal against the race, and should be an object of contemptuous abhorrence by all healthy people.

The following taken from a daily paper is apropos:

PARIS, Nov. 11, 1906.—Public attention again has been drawn to the national peril involved in the constantly diminishing birth rate by the publication of the vital statistics for 1905, showing births for the year of 807,292, a decrease of 10,937 from the total of 1904. The reason for this decrease is

not to be found in a reduction of the number of marriages, in which the statistics show a slight increase over 1904, but it apparently arises from the aversion of the French people to raise large families.

The national association, which is studying the matter, has reached the conclusion that it is necessary to inculcate the idea that any couple that raises more than three children merits and is entitled to public gratitude and protection.

DISCUSSION

ON PAPERS OF DRS. EDGAR,* JOHNSON, KEYES AND HUNSBERGER.

DR. PRINCE A. MORROW, New York City, in answer to a question by Dr. Stolper, as to what states he had reference to that had laws regulating the granting of marriage licenses so as to prevent the propagation of disease, said that the marriage law of Indiana, as he recalled it, requires the applicant for a license to marry to report to the clerk his freedom from any contagious disease. That is a condition of license to marry. If he perjures himself and actually transmits the disease to his wife, he becomes amenable to the law. There is not only a civil, but, Morrow believes, a penal, responsibility imposed—certainly a civil responsibility. The law in Michigan, he thinks, differs somewhat. The law has been in operation, Dr. Morrow said, about two years in Indiana; of the law in Michigan he could not speak with absolute accuracy, because he had not referred to it for a year or two; but he thinks it is very much of the same general order.

DR. G. T. SWARTS, Providence, R. I., said that the State Board of Health in Indiana issues to all physicians in general practice a certain card circular that states that the fine is $200 or so for marrying if one has syphilis; another card states the penalty for marrying if one has gonorrhea. These are given to the patients of the practitioners at the time of the visit; it may be but one visit, but they are given this card to take to their homes and think over. Thus all patients are warned of the penalty of the law whether they desire warning or not.

DR. LISTON H. MONTGOMERY, Chicago, said that in two cases of gonococcus infection that had come under his observation, he used a 25 per cent. solution of argyrol. One drop was instilled into the eye every two hours, night and day. In addition to that, not exactly alternating, 1 drop of a 4 per cent. solution of nitrate of silver was used three times a day, and also boracic acid compresses were applied to each eye to saturate the tissues, the lachrymal sac, etc., as a curative means of destroying the gonococci as well as a probable preventive of silver catarrh. The treatment in the two cases referred to cleared up the discharge in ten days. In one patient there was a little turgescence remaining. The infection seemed to have been cut short and the discharge stopped all at once, on the tenth day. Even up to the night previous the discharge was considerable, and seemingly almost poured out of each eye. In that case the infection in one eye seemed to follow two days after the first eye became infected; both eyes seemed to clear right up apparently in the tenth night or on the tenth day.

DR. H. P. JACK, Canisteo, N. Y., said that in a recent discussion of this matter of educating the physician and the public as against gonorrheal and syphilitic infection and the dangers of abortion, Dr. Howard A. Kelly, after going over the subject, decided that the education was useless and the only hope was religion. Dr. Jack considered this not a sensible position to take. In Europe, in some of the clinics, there are three or four conscientious, earnest workers that give to every individual who is suffering from syphilis or gonorrhea a succinct statement, in printed form, explaining the dangers to which he is subjected and to which he may subject others. Perhaps the patient does not always read it; but many times he does. Such a statement should be given out in all of our great clinics like the Johns Hopkins or the University of Pennsylvania. It is an educational means that is before us and this Section ought to take it up. Dr. Jack said it would be a most excellent idea for this Section to appoint a committee to draft succinct statements of what might or might not happen to a given individual, written in plainest, clearest English, as regards syphilis and gonorrhea, and also as regards the dangers of abortion; that it might be given out by the clinic and by the general practitioner. In that way not only will we educate the public, but by these very things we will educate many physicians that never reach a medical association but still do a large amount of the practice of the country.

DR. H. D. HOLTON, Brattleboro, Vt., said that two years ago a committee of the Conference of State and Provincial Boards of Health prepared such a circular as has been referred to. They had, however, no funds wherewith to distribute such a circular. The state boards of health of several states took the matter up and the circulars were sent to every physician in some six states. Dr. Holton expressed regret that the House of Delegates and the Trustees of the American Medical Association had not seen their way clear to make an appropriation to send that circular to every college president in the United States, to every preparatory school and high school. If this matter could be placed before the colleges, if the young men in the preparatory schools could be educated in it, it seems that it would be the great work, not only of this Section but of the profession, to educate the people of the United States.

A great deal of gonorrhea and syphilis exists from ignorance. Innocent parties are affected, as has been suggested, and with the young men in many institutions the matter has been treated in such a way as though it were a pretty good joke on the young man if he contracted one of these diseases. They see no seriousness in it to themselves and to their families—or their want of families. Dr. Holton said he did not know how this can be met, unless a fund is raised whereby such a circular can be distributed in the manner indicated.

DR. J. H. STOLPER, Krebs, Okla., suggested a United States department of public health which could send the circular all over the United States. The authorities have the free use of the United States printing office; they have the free use of the mail. Dr. Stolper suggested that this Section appoint a committee to take the matter up with the surgeon general.

DR. S. A. KNOPF, New York City, said that he does not believe it is wise to always wait on the government to do things when we can do something ourselves. He referred to the fact that the chairman has written admirable papers on the subject, and so have other members of the American Society of Sanitary and Moral Prophylaxis, an organization having its headquarters in New York City. Dr. Knopf said that it is perfectly just to call a spade a spade; and with all due respect to the sensibilities of some men and women, he believes we should not hesitate to distribute such information to our colleges and to our schools. He said the mother of his office boy called on him the other day and said: "Doctor, won't you please talk to my boy?" He asked her what about. "Well, he has nightly emissions and I scolded him about it; and he went to a certain dispensary" (a New York dispensary attached to a large hospital), "and the doctor patted him on the back and said: 'My boy, you have got to see somebody and relieve yourself.'" Dr. Knopf said he thinks that is criminal. Instead of giving that boy proper instruction and a proper talk, that boy has not only been led into temptation but guided into temptation—directed to temptation. If he had his way he would do what the Germans have done in regard to tuberculosis: Interest some great philanthropist and ask the men versed in this particular branch of preventive medicine regarding venereal diseases to write a pamphlet not longer than 20 or 30 pages, in such language that everybody can read it, and that can be handed to everybody, and printed so cheaply that it would not cost so very much. He would then send it to, first, all the members of the Section; and then tell them, "You can have as many copies as you want—50 or 100 for $1 or 50 cents," and he knows that a good many of them would be willing to contribute a little bit. Then our Section will have enough to give it a starter; and he would be willing to donate whatever his means will permit to start the ball rolling; but let something be done. We talk and talk and talk about the necessity of in-

* The article of Dr. Edgar in this "Symposium on the Hygiene of the Family in Relation to the Productive Energy and Health of the Offspring," appeared in THE JOURNAL last week.

formation and educating the old and the young and the middle aged; now let us go to work and start and let us use some of that material we have already on hand and give it as wide a circulation as possible and begin to do some good and do a little less talking.

DR. G. LLOYD MAGRUDER, Washington, D. C., said he has been a physician to some colleges and has been thrown in close contact with students. Those students were taught that they were to avoid the brothel and were to live an upright life; and they were restricted and especially warned against temptations. He has received valuable information from West Point. He was especially interested in this academy, having had a son there and having been on the board of visitors. He watched the curriculum during the four years while his son was there. Colonel Havard, the present acting surgeon general, wrote a brochure of a few pages and handed it to every cadet and every enlisted man on the reservation. He laid stress on the dangers of gonorrhea and syphilis; he cited the various statistics that had prevailed in the German, the French and our own Army; he also laid stress on the fact that the same rule should prevail for the man as for the woman. Having his son there who was intimately associated with the boys, he questioned him to know how they were affected by Colonel Havard's teachings. That work produced a magnificent impression, and there is no finer set of men ever sent out from any school than from that place.

For a number of years the question of a department of public health has been brought up before this Association, with the recommendation that there should be a department of public health, with a physician in charge, and that that physician should be a cabinet officer. This has never succeeded, because there has been much opposition. The committee of the American Association for the Advancement of Science had a special conference with President Roosevelt on the subject. He gave the committee to understand that he did not want a department of public health, but that if they would advocate the use of the facilities that were now in force under the government and form a bureau of public health with greater power, under one of the departments, he would heartily endorse it.

DR. G. W. DRAKE, Hollins, Va., said that the papers which have been read on the subject of prevention of conception should not be ignored. He thinks that there is no greater evil which threatens us to-day than the increasing habit of limiting the number of children in the families; voluntary limitation, in whatever way it is performed. We ought to teach, as selfishness is a governing principle, it seems, of our lives, the deteriorating effect on the father, on the wife and on the husband. When a resolution is passed appointing a committee to take up this subject, let the instruction in regard to this prevention of conception be included. He thinks the time has come when a physician should remember that the word doctor, primarily, means teacher; and a doctor's advice is worth more than his medicine. He should advise his patients; he should advise the community; he should teach on every proper occasion all the rules of health and all the preventives against disease; and he agrees with one of the speakers that a department should be in all of our colleges—male and female—a department of guidance; and in that department everything conducive to health should be taught, nothing omitted. He emphasized the importance of attention to the papers which have been read on the prevention of conception.

DR. PRINCE A. MORROW, New York City, said that the question of education is not being neglected by the American Society of Sanitary and Moral Prophylaxis. This past week in New York City there were six lectures given to settlements and to organizations and to groups of the Y. M. C. A. organization; there are regular lectures given twice a week to girls in the settlements and to mothers' meetings. In Chicago there are two lectures given each month to these mothers' meetings, with the idea of instructing mothers how to give early education or instruction in such matters to their children.

So far as pamphlets are concerned, one of the pamphlets issued by this society has had a circulation of over 10,000 without ever appearing on any printed page. It does not speak for the excellence of that particular pamphlet; it simply indicates the avidity on the part of the public for this kind of information—information that is sound and sanative and decent.

He thinks that instead of these individual efforts, if efforts were simply united with these societies that have been organized in different states and organized for the specific purpose of instruction in the physiology and hygiene of sex, a vast deal of good would be accomplished.

DR. W. F. SNOW, Leland Stanford, Jr., University, California, said that among college students, as is true everywhere, there is great ignorance on these questions, combined with an overconsciousness of the moral side of venereal diseases. In the college of which he spoke, experiments had been tried in giving separate lectures to the young men and to the young women on this subject. The lectures were carefully planned and were given in registered university courses in personal hygiene by one of the instructors, but these particular lectures were given separately to the men and the women of the class, and he believes that certain harm and additional accentuation of self-consciousness comes out of just such deference to the moral side of the question.

As an experiment, Dr. Snow began three years ago a course of lectures on infectious diseases, in which he took up tuberculosis, typhoid fever, etc., following with syphilis and gonorrhea, not with regard to the moral side of the subject at all, but simply as infectious, communicable diseases. The classes in this particular institution are open to both the men and the women; and he gave these talks directly to the mixed classes, not attempting to emphasize in class anything outside of the fact that these diseases are communicable. He found a very immediate and wholesome response on the part of the students. The young men, for instance, do not laugh at such a course; they do not think that it is a subject to make fun of outside of the class room. It seems to him to be a wholesome experience to drive these things home to them as epidemiologic facts in the presence of the young women of the university. If these facts are brought before the public as they are brought before physicians, and prostitution is subordinated in the discussion simply to its place among the many other channels of infection, then the public will frankly discuss gonorrhea and syphilis, as they now do typhoid fever, recognizing without undue emphasis or embarrassment that personal contact is one of the very important modes of communication, but only one of the modes.

DR. J. NEWTON HUNSBERGER, Skippack, Pa., said that too little attention is paid to conditions as they really exist. He did not for a moment wish to belittle the harm which a gonorrheal or syphilitic infection may do; but there are other conditions and other evils, of far greater importance, and which are a thousandfold greater factors in race suicide than these infections. The specialist is prone to allow certain ideas to run away with him, especially if they are congenial ones. No one can convince the general practitioner, and no reliable statistics can be produced, to prove that gonorrhea or syphilis are nearly so dangerous and destructive to life and health as they would have us believe. And they certainly are not the great factors in race suicide.

Sir James Barr on Public Health.—The annual congress of the British Royal Institute of Public Health was opened June 29, in London, England. The meeting was made the occasion of a somewhat startling speech by Sir James Barr, the well-known Liverpool physician. In the course of his speech he said that if the money spent on the treatment of disease were diverted to the preservation of health, our large hospitals would not be half filled, purveyors of synthetic remedies and artificial foods might find a suitable place in homes for the destitute, the necessity for surgeons and specialists would largely disappear, and physicians and general practitioners would be fully occupied in advising their clientele on the preservation of health. It was possible, Dr. Barr said, to have some process of artificial selection in the human race, and the nation which would produce the finest race would win in the long run. If the state and parents would do their duty, he thought the decline in the birth rate would soon be arrested.

A CLINICAL METHOD FOR DETERMINING THE ALKALINITY OF THE BLOOD.*

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The desirability of a clinical method for determining the alkalinity of blood—that is to say, the OH and H ionization—has long been recognized. The recent determinations of this ionization by Friedenthal,[1] Höber,[2] Fraenkel,[3] Farkas[4] and Tangl and his pupils[5] have shown that the alkalinity is very slight and subject to very little variation. Accordingly a clinical method has seemed difficult to seek. The recent study of indicators by Salm,[6] however, characterizing with the greatest accuracy a whole series of indicators, has suggested the possibility of devising a method at once certain, accurate and easy of application. The present paper is concerned with experiments to this end.

There are two general methods by which the reaction of a fluid may be quantitatively measured: 1. Titration to an end point. 2. Determination of the H and OH ionization. The former yields information concerning the amount of base or of acid present in a solution, but no direct evidence concerning the nature of the equilibrium. According to such a method, HCl and NaH_2PO_4 in equivalent amounts are equally acid. The latter determination of the H and OH ionization yields no direct information regarding the absolute amounts of base and acid in solution, but gives us direct evidence concerning the intensity of alkalinity, that is, the condition of the equilibrium.

All the methods so far described depend on titration. There are two reasons for this: 1. Investigations of the OH and H ionization of blood have hitherto been possible only with the aid of the concentration cell, involving difficult procedure and expert technic. 2. The indicators which have been in use do not change color within the range of ionization found in blood. Recently, however, Salm has carefully studied the exact point of H and OH ionization at which a number of indicators turn, and accordingly it has been possible to pick out from this list a certain number of these that give sharp color reactions at about the H ion concentration of the blood, in particular two, rosolic acid and neutral red.

Rosolic acid is orange-yellow in the presence of acid and red in the presence of alkali. There is an intermediate pink color at neutrality. According to Salm, it is orange-yellow at 1.10^{-6}n.H.; pink at 1.10^{-7}n.H., and red at 1.10^{-8}n.H. The changes are well marked and intermediate shades were easily distinguished. The variations of H ionization of the blood lies between 0.1×10^{-7} and 3×10^{-7} or less, a variation that falls within the bounds of neutrality as ordinarily conceived. It will be seen, however, that this variation lies at about the middle of the color change of rosolic acid from yellow to red or, to be more exact, between the pink and the red, and it was to be expected that, if sensitive enough, this variation would be noticeable in a difference in shade of the indicator. In the present investigation rosolic acid was used. The first examinations were made on rabbit's blood. One c.c. of fresh rabbit's blood was caught in a centrifuge tube in which 10 drops of a 1 per cent. solution of NaF had been placed and 10 c.c. normal salt solution added. This was placed in the centrifuge for a few minutes, and the supernatant liquid then removed with a pipette to a clean test tube. Two drops of a 0.1 per cent. alcoholic rosolic acid solution were added and the pink color produced was compared with a standard. The test was repeated with laked blood from which the proteids had been removed by coagulation by heat. The same degree of color was obtained in this case as in the preceding experiment; that is, the reaction was neutral or slightly more than 1×10^{-7}. The objections to the clinical application of this method are that a comparatively large quantity of blood is required, that a standard to compare it with must be at hand, and principally that the color of the blood itself interferes with the color reaction. It was, therefore, determined to exclude, for the time being, the formed elements and to use the serum alone. The test-tube method also seemed cumbersome for clinical work, so ash-free filter paper was prepared with the alcoholic solution of rosolic acid.[7] The paper was soaked in the solution and then hung up in the air to dry. While still moist, the paper was yellow, but on drying, which occurred rapidly, it became a delicate salmon pink. The serum was obtained in the usual way from the finger or ear of the patient, by capillary tubes, which, after the blood had clotted, were placed in the centrifuge. After the serum had separated, the tubes were opened with a file and a small drop of the serum removed by a capillary pipette and placed on the filter paper. The normal serum produced a strongly marked red color which contrasted well with the unchanged parts of the paper.

The serum in two cases of diabetic coma did not produce this change in color. The same observation was made in the case of a patient suffering with acute meningitis, and at the time of examination, in a comatose condition. The urine of this patient contained acetone, but no sugar. At autopsy the case proved to be one of basillar meningitis. The serum from a large number of cases of coma due to meningitis, without acetonuria, showed the normal alkaline reaction to rosolic acid.

The serum from a case of acute jaundice showed the same reduction in alkalinity that was observed in the diabetic coma. The serum in this case was yellower than normal and left a yellow stain on the paper quite distinct from the pale color of the diabetic reaction.

The blood from a number of athletes was examined in a similar way to determine if a variation in the alkalinity of the blood could be shown to occur after extreme physical exertion. For this purpose the blood was taken from members of the senior class crew immediately after a hard four-mile race, when all the crew were in a state of considerable exhaustion. The reaction was normal. No variation from the normal was observed also in the serum of a runner who had just completed a two-mile race and who was completely exhausted, fainting immediately after the blood had been obtained.

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* Read in the Section on Pathology and Physiology of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

* From the Laboratories of Clinical Pathology and Biological Chemistry of the Harvard Medical School and the Boston City Hospital.

1. Friedenthal: Ztschr. für allgem. Physiologie, 1902, i, 56; 1904, iv, 44.
2. Höber: Archiv für die gesammte Physiologie, 1900, lxxxi, 522; 1903, xcix, 572. Also Hofmeister's Beiträge, 1903, iii, 525.
3. Fränkel: Archiv für die gesammte Physiologie, 1903, xcvi, 601.
4. Farkas: Archiv für die gesammte Physiologie, 1903, xcviii, 551.
5. Other articles on the subject which may be consulted are: Benedict, H.: Archiv für die gesammte Physiologie, 1906, cxv, 106-117. Szili, Alex.: Ibid., pp. 72 and 82.
6. Salm, Eduard: Ztschr. für physikalische Chemie, 1906, lvii,
7. The rosolic acid paper mentioned above may be obtained from Dr. R. L. Emerson, 739 Boylston St., Boston.

A number of cases of marked diabetes, with large quantities of acetone and diacetic acid and high sugar percentages, gave perfectly normal reaction. In all these cases there was no disturbance of consciousness, some of the patients being up and attending to their affairs.

A second experiment was carried out to verify these clinical observations. A rabbit was fed 25 c.c. of a 0.9 per cent. solution of HCl daily for two weeks. The serum showed no variation during this time. An increase in alkalinity above the normal has so far not been observed in any case.

At times, in cases of diabetes, an intermediate reaction between the normal and the marked reaction of the diabetic coma has been observed. It appears as a delayed reaction. The paper remains unchanged by the serum at first, but after a few seconds the red color gradually appears and attains its full normal intensity in a minute or two. This appears to be due to the loss of CO_2 by the serum on exposure to the air, and interferes with the use of the intermediate color ractions for quantitative estimation in the present form of the method.

From these observations it appears probable that the reaction of the blood is maintained at the normal point of ionization even in cases of marked acidosis. When, in extreme cases, the entire reserve of alkali is exhausted and the concentration of H ions increases, the result is coma. That this variation is extremely small, probably not more than $1.5^{-1} \times 10^{-7}$ n.H., is in full accord with the accepted views on the delicacy of the equilibrium that is constantly maintained in the body and the sensitiveness of living protoplasm in general to variations in reaction.

Henderson and Black[8] have shown that in a system containing both free and combined carbonic acid in which there is not great variation in the tension of carbonic acid, the H and OH ionization correspond to those of blood serum and that enormous variation in $NaHCO_3$ results from slight variation (corresponding to that found in blood) in H and OH ionization. Therefore, it follows that variations in reaction to rosolic acid indicate not only H and OH ionization, but also $NaHCO_3$ content of blood, perhaps the most important factor in acidosis.

The present investigation shows that the slight variation in H and OH ionization heretofore detected only by the aid of the concentration cell can quite certainly be observed with the aid of properly chosen indicators, thus making possible the clinical investigation of the subject. It remains to determine which the best method of application may be, and then to proceed to a quantitative clinical study.

8. Henderson and Black: Am. Jour. of Physiol., April, 1907.

Diagnosis of Suppurative Labyrinthitis.—W. P. Eagleton has tested the value of v. Stein's symptom in diagnosing suppuration of the labyrinth and gives his conclusions in the *Archives of Otology*, June, 1907. He believes that the symptom has a value in chronic non-suppurative aural disease in which the labyrinth has become affected and that it is a very valuable aid in diagnosing the chronic suppurations of the semicircular canals. The symptom is probably more marked in cases of early involvement of the labyrinth, and may persist in some cases after drainage. The symptom described by v. Stein consists in "a peculiar inability of patients suffering from labyrinthine disturbances to execute delicate co-ordinate movements."

THE VESSEL CHANGES AND OTHER HISTOLOGIC FEATURES OF CUTANEOUS SYPHILIS.*

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While the literature covering the pathologic anatomy of syphilitic lesions is very extensive, it contains little which tends to elucidate the manner in which the process develops and spreads, many of the descriptions applying equally well to the other infectious granulomata. In order to arrive at any satisfactory conclusion or obtain a proper conception of the reaction the syphilitic organism produces it is necessary to examine an enormous amount of material, not only in different stages of evolution of a given lesion, but also in series. The present article is an endeavor, not by any means to cover the entire histopathology of cutaneous syphilis, but rather to point out some features in the histologic picture of the early and late lesions which are more or less pathognomonic and which perhaps offer some data on which to base a microscopic diagnosis.

Aside from the presence of the spirochætæ in the tissues, the reaction which they excite is more or less peculiar to this condition and should enable one to make a diagnosis in the majority of instances. It is a not infrequent experience of dermatologists to meet with cases where surgeons have excised initial lesions on extragenital parts under the mistaken diagnosis of malignant growths. To the expert the clinical features of such lesions should be sufficiently distinctive to exclude the latter, and where there is a doubt it is often a simple matter to examine histologically and differentiate the growth from carcinoma, which is about the most common condition which comes into question.

Hoffmann[1] believes the spirochætæ enter the lymph spaces of the rete where they are protected against phagocytosis or immediately make their way into the lymph vessels of the papillæ. Only after about three weeks, when multiplication has taken place, does a reaction appear. The first changes then would be an endo- and perilymphangitis, followed by budding of capillaries, infiltration and connective tissue hyperplasia. According to the findings of Ehrmann[2] the lymph vessels are involved secondarily, the earliest change taking place in the connective tissue interstices, followed by new capillary formation and perivascular infiltration. He based his deductions on gelatin injection experiments with initial lesions immediately after their excision. Unless special technic is observed the vessels can not readily be differentiated. In a general way, however, the arteries are distinguished from the accompanying veins and lymphatics by their thicker coats and greater abundance of elastic fibers. In an infiltration the media is relatively free and appears as a band separating the intima from the exudate. The walls of the lymphatics are thinner than those of the veins. The lymphatic capillaries are apt to have a more irregular lumen than the blood capillaries and a less complete lining. Their lumina often contain infarctions of a homogenous substance and sometimes a few lymphocytes.

In practice, as a rule, patients do not present them-

* Read in the Section on Cutaneous Medicine and Surgery of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Die Ætiologie der Syphilis: monograph, 1906.
2. Archiv. f. Derm. u. Syph., 1904, lxviii, 1.

selves until some days after the appearance of the primary sore, when it has already progressed beyond the classical coat-sleeve infiltration and both blood and lymph vessels are involved. The following are brief descriptions of several chancres, all with the same characteristic changes but in different stages of development:

In one, less than a week old, the epidermis was eroded over a portion of its extent and compressed into a narrow band with obliteration of the pegs. Beyond the erosion acanthosis and emigration of leucocytes were the chief changes. In the corium the infiltration was quite diffuse superficially, encroaching upon the epidermis, but below it was distinctly "coat-sleeve" (Fig. 1), and consisted of small lymphocytes, plasma cells, mast cells and proliferated fibroblasts, many of the latter being uncommonly long, either spindle-shaped or stellate with fine processes. Large cells also appeared with irregular bodies, granular protoplasm and hyperchromatic nuclei, some eccentric and others central; they were probably cross sections of swollen fibroblasts. Where the cells were confined to the vessels they were several layers deep and consisted of the round and plasma variety. The capillaries were increased in number and, with the exception of a few in the upper cutis which were dilated, the majority had either swollen or proliferated endothelium. The walls of the larger vessels were thicker than normal and their lumina somewhat narrowed. A number of the lymph spaces were simply dilated, others showed proliferated endothelium. There was no apparent collagenous hypertrophy or edema.

In a specimen six days old the epidermis over the most active part of the lesion was converted into a flattened amorphous layer containing many round and polynuclear cells and, superficially, blood pigment. The ridge system was replaced by a dense zone of cells, lymphocytes predominating. On either side the contiguous epidermis showed acanthosis and emigrated leucocytes. In the cutis the area of greatest intensity was made up of many new-formed capillaries and an infiltration of lymphocytes, plasma cells, mast cells and fibroblasts. A number of occluded blood and lymph capillaries were scarcely recognizable in the dense exudate; others had swollen or proliferated endothelium and had their lumina distended with blood or narrowed as the result of proliferation and compression. The larger vessels showed a decided thickening and infiltration of the adventitia, with or without a corresponding change in the intima. The connective tissue of the cutis was the seat here and there of a slight fibrosis.

In an ulcerated chancre there was a great increase in capillaries in the upper layers of the corium, some of which were filled with blood; others were empty. The infiltration, of the same type as in the preceding cases, was so dense that the cells had the appearance almost of a mosaic. Longitudinal, oblique and transverse sections of the capillaries showed proliferation of their lining and narrowing or obliteration of their lumina (Fig. 2). The larger vessels in addition were the seat of a periarteritis and infiltration. In the inferior portion of the cutis were present several large vessels containing organized thrombi, their walls presenting the characteristic changes of a panarteritis. There was no appreciable hypertrophy or edema of the collagenous tissue.

In a chancre at the height of its development there was an acanthosis of the epidermis, with clubbed and knobby rete pegs, some edema and parakeratosis. The cutis was very cellular, only a few strands of connective tissue being visible here and there. A narrow band in the inferior portion of the cutis had the appearance of condensation. A number of blood and lymph capillaries in the papillary layer were dilated and empty, with no apparent change in their endothelium. In those situated more deeply, however, an endarteritis obliterans was present and only solid cords remained to indicate their previous position. Many of the vessels contained thrombi of a homogeneous material which partially or completely filled their cavities. Evidences of fatty degeneration and retrograde metamorphosis were present in patches of cloudiness and vacuolization.

In sections from the edge of a fully-developed chancre, including healthy tissue, were seen some acanthosis of the epidermis, the pegs being more widened than lengthened, and an invasion of leucocytes. In the papillary and upper reticular layers of the corium through the edge of the chancre the infiltration was diffuse and the blood and lymph capillaries were markedly dilated and increased in number, some containing thrombi. Endothelial proliferation was slight, the cells being more closely packed but not encroaching on the lumen. Passing through the reticular layer of the hypoderm the infiltrate was very dense and many of the cells so distorted from pressure that it was difficult to say to which type they belonged. In this area no lumina were visible, only the thickened occluded vessels. In the adjoining tissue an endo- and periarteritis were present and the perivascular exudate was composed largely of plasma cells. Bands of hypertrophied connective tissue surrounded some of the vessels and part of the active infiltration.

Summing up, then, the main features of the primary lesion we have: 1, An increase in blood vessels and consecutive changes in their walls; 2, cellular infiltration; 3, involvement of the connective tissue; 4, secondary epidermic changes.

Many causes have been assigned to the hardness of the sclerosis, as capillary lymphangitis with suffusion of the neighboring connective tissue;[3] infiltration cells, thickening of the vessel walls, new growth of connective tissue and dryness and rigidity of the cutis; hypertrophy of the collagenous tissue;[4] swelling of the collagenous tissue, distension of lymph spaces with lymphocytes and an edema.[1]

Of those that have come under my observation only a few showed fibrosis and, with the exception of two, in so slight an amount that it does not seem sufficient of itself to produce the degree of hardness clinically appreciable. The two referred to are the last one above described and a flat chancre in which hyperplasia was a noteworthy feature. In another lesion of the chin, which was very hard clinically, the sections were almost entirely cellular, with numerous vessels and but little connective tissue, so that the collagenous tissue hypertrophy as the factor which has been evoked by Unna and others does not seem to explain the condition. The closely aggregated sclerosed vessels probably play a greater rôle than has been given them.

The erosion is analogous to the central involution of the later lesions and is due to necrosis of the infiltration and the overlying epidermis. In phagedenic chancres one or several elements are to be considered; either secondary infection, lack of resisting power on the part of the affected individual, vessel changes and possible toxins capable of producing local necrosis.

3. Ricord, quoted by I. Neumann: Syphilis, 1906, p. 74.
4. Unna: Histopathology of the Diseases of the Skin, p. 529.

The involution of a chancre is brought about by fatty degeneration, the compression and narrowing of the vessels leading to disturbances in nutrition and retrograde changes. Ehrmann is of the opinion that spontaneous healing takes place by phagocytosis.

When it comes to secondary manifestations of the disease, as a rule, all doubt is removed and a histologic examination as an aid to diagnosis does not come into question, excepting, perhaps, in certain drug eruptions, as bromid and iodid, which may simulate very closely certain ulcerative and fungating syphilitic lesions. A case of this sort recently came under my observation, where fungating lesions were present about the face and genitals of a young woman along with a general rash, which were distinguished with great difficulty from a possible specific infection. Fungating growths of the vulva resembling flat condylomata were examined very carefully for spirochætæ with negative result.

The evolution and histology of the roseola and papule seem to show that these lesions are embolic rather than toxic. A possible explanation of the development of circinate and gyrate lesions by the involvement of a terminal vascular cone has been suggested.

In the roseola Hoffmann[1] found spirochætæ in the dilated end capillaries of the papillæ, and the long interval which elapses between their entrance in the body and the appearance of the efflorescence suggested that the organisms give off few toxins, which only after a longer period are capable of producing a deleterious effect. Or, according to Thalmann, an endotoxin liberated on destruction of the body may be causative.

Histologically, a macular lesion presents a mild reaction. The epidermis may be unchanged or flattened out with loss of the ridge system. In the upper corium the vessels were moderately dilated, filled with blood and ensheathed by a slight infiltration of round cells. The endothelium was swollen, and round and spindle cells were seen in the adventitia of the larger vessels. The cutaneous appendages were normal and surrounded by a few lymphocytes.

The small miliary papule, lichen syphiliticus (Fig. 3), is a follicular process extending from the epidermis into the cutis below the hair papilla. The infiltrate was located about the hair follicle, which remained intact and sent outgrowths into the surrounding nodule, which nodule was composed of a reticular structure holding new-formed blood vessels, round, plasma and connective tissue cells in its meshes. Most of the vessels inside of the nodular area were obliterated, but at the periphery they were filled with blood. A number of the superficial ones were thrombosed and appeared like giant cells. Away from the perifollicular disposition the vessel walls were thickened somewhat and mantled by round and plasma cells. The coil glands were frequently the seat of a marked fatty degeneration and surrounded by an effusion of round and plasma cells. The erector pili muscles were likewise infiltrated. The epidermis was slightly edematous and thinned. There was present sometimes a pustule, produced by the instability of the tissue matrix and liquefaction of the syphilitic infiltrate.

In the large papular syphilide there were present in the epidermis parakeratosis, acanthosis and edema, with a marked invasion of polynuclear leucocytes. Epithelial mitoses were rather frequent. The cellular infiltration in the early stages (Fig. 4) of the lesion was limited to the vessels in the upper part of the corium, and the papule was produced chiefly by the epithelial hyperplasia, but later it was more diffuse and surrounded all the vessels of the deep and superficial plexuses. Most of them had thickened walls and consequent diminution of their caliber, but here and there a few remained dilated and showed little if any change. Some were partially thrombosed. Not infrequently immediately about some of the vessels and coil glands there occurred a degeneration of the connective tissue, reducing it to a fibrillary network which took the basic stain faintly and was probably toxic in origin. The cellular exudate was composed of round cells with a few plasma cells scattered between them. There was also hyperplasia of the fibroblasts. The pustulation which occurs in the large papule represents in a major degree the central involution which takes place.

The rupial syphilide showed a very marked parakeratosis with leucocytic infiltration of the entire horny layer and here and there an aggregation of cells, coagulated serum and detritus entering into the crust formation. The overgrowth of the rete was irregular, many of the pegs being narrow and pointed, others widened and bulging into the cutis. It was edematous, in places necrotic, and lymphocytes were so numerous in it that many of the epithelial cells were completely hidden.

The cellular effusion in the corium was quite superficial, being almost limited to the papillary and immediately subjacent layer, except where it followed along the course of a hair follicle or mantled a few of the deeper vessels and coil glands. In the papillæ blood and lymph capillaries were markedly dilated, some containing a homogeneous substance. Where the inflammatory reaction was most intense the vessels were narrowed, the larger and deeper ones showing more of an adventitial proliferation. The fibroblasts were increased in number; no giant cells were present. A mucinous degeneration appeared about the coil glands and some of the vessels.

In the nodular or tubercular syphilide the entire cutis from the epidermis to the subcutaneous fat tissue was involved, under a low power showing alternating light and dark areas, the former representing the altered blood vessels and the latter a cellular effusion. Under the high power the infiltration was composed of plasma and giant cells, lymphocytes and hyperplastic fibroblasts. The vessels, increased in number, showed the effects of an obliterating endarteritis (Figs. 5 and 6), their former site being marked by solid cords, groups of irregularly-disposed cells with pale staining nuclei and giant cells with peripheral or central nuclei or both. Near the edge of the section were a few vessels with narrowed lumina and a hyperplasia of all their coats. A number of the lymph spaces were thrombosed. The few remaining bundles of connective tissue had here and there a vacuolated appearance, the result probably of a fatty degeneration and beginning regression. The epidermis was flattened out into a very thin band.

The gumma (Fig. 7) compromises the derma throughout its entire extent with marked vascular changes, a diffuse infiltration and necrotic foci. Viewed with the low power, there was apparently a decrease in the number of blood vessels, but on careful examination it was found that many were obliterated or had their caliber reduced and their walls thickened. The infiltration consisted of lymphocytes, plasma cells and a large number of hyperplastic fibroblasts. One or more areas of caseation were observed and about them fragmented nuclei. When intact the epidermis usually presented no changes beyond a reduction in thickness.

From the foregoing descriptions it will be seen that the differences existing between the various specific lesions are of degree rather than kind. With the exception of the macular syphilide, all consist of a dense infiltration of the same kind of cells, as a rule the lymphocyte being the most common. However, in some specimens lymphocytes in others plasma cells predominate, but not with sufficient constancy to accept their presence, numerically, as of pathognomonic value. The exudate begins in the papillary layer about the superficial plexus, from thence involving the deeper tissue.

Changes in the collagenous tissue, except as it is replaced by granulation tissue, are not regular and are often so slight that they are not worthy of comment. In viewing a series of lesions from a given number of cases I found that ordinarily the changes were not sufficiently well marked to be of any practical diagnostic aid. Nevertheless, both hypertrophy and atrophy of the connective tissue, as a result of vessel changes, do occur. An instance of the latter was reported by me in a case of symmetrical cutaneous atrophy with the coincident development of syphilis of the skin and nervous system,[5] the alterations in the vessels' walls (Fig. 8) and the perivascular infiltration pointing strongly to these structures as the primary seat of the trouble. Or a productive interstitial inflammation may be secondary, which is illustrated in the accompanying photomicrograph (Fig. 9) of a syphilitic laryngitis, the larynx having been extirpated under the mistaken diagnosis of a malignant growth.

It is not uncommon to find an epithelioma developing on a syphiloma (Fig. 10), especially about the oral cavity. The epithelial hyperplasia is probably brought about by irritation, increased hyperemia, as well as by changes in the underlying connective tissue permitting an epithelial downgrowth.

Coming to the vascular system, in all the lesions except the macule the reaction is marked, being of greatest severity in the late secondary and tertiary stages of the disease and showing all grades from swelling of the endothelium to proliferation of all the coats and obliteration of the lumen. It is very likely that there are two processes, one taking its origin in the adventitia and the other in the intima, possibly simultaneously, or, as investigations on the cerebral arteries suggest, independently of each other.

Hansemann[6] is of the opinion that the syphilitic virus has a special predilection for the endothelial cells, whether of the endocardium, large or small arteries, veins or lymphatics; all the rest may be involved secondarily. To the vascular changes may be attributed the formation of giant cells so frequently encountered in the nodular and tubercular syphilide and in some of the early secondary papules. It is rare to find them in gummata, and it has not been my experience to find them in initial lesions, although Unna and Rieder claim to have done so. They appear to be a more constant feature of the tubercular and serpiginous lesions, in which they are often present in groups. In many instances it is simple enough to trace their formation to proliferated endothelium and thrombosed lumina. In others it is much more difficult to establish such a relationship, but if sections in series are studied it is demonstrable. The type most frequently met with is the Langhans with peripheral nuclei; the myeloid with central nuclei occasionally. In one case a double row of nuclei appeared whose formation it was difficult to explain.

5. Jour. of Cutan. Dis., April 1904, xxii, 255.
6. Trans. V. Internat. Derm. Kongress, Berlin, 1904, p. 205.

Giant cells of specific lesions differ from those found in lupus in being less completely formed, in showing in many instances only a partial thrombosis and in their irregular nuclear multiplication, suggesting that the process is a more acute one. As they are more numerous in serpiginous than other lesions, it has occurred to me that the extension of those lesions could be explained by the progressive thrombosis of the vessels. Many specimens support this idea, but especially one from a serpiginous lesion of the thigh (Fig. 11), in which the histologic findings consisted of foci of groups of thrombosed vessels with a moderate cellular effusion.

While apparently true of cutaneous syphilis, it is not intended to impute to metamorphosed vessels the origin of giant cells in all specific processes. Versé[7] found in arteritis syphilitica cerebralis giant cells in all layers of the vessel wall in one of his cases, but especially in the intima where they flanked the entrance to an aneurism and had an enormous number of nuclei. In other cases they were found in the necrotic media. He believed that many of them were foreign body giant cells. v. Baumgarten[8] has expressed the belief that the presence of giant cells in syphilitic processes indicated a combination of tuberculosis and syphilis, but in none of the cases that came under my observation was tuberculosis demonstrable anywhere.

The syphilitic products show a greater instability in some lesions than in others, as in the pustular, rupial and gummatous. In the two former, perhaps, the question of soil is the more significant, while in the latter the severe vessel alterations interfering with nutrition offer an explanation. The involution of the efflorescences is brought about by necrobiosis, fatty metamorphosis and cascation.

Recurrences in pre-spirochæta days were explained by Neumann[3] as due to the proliferation of cells which remained at the site of the original lesion. Now, however, the multiplication of remaining spirochætæ is invoked as the cause by Neisser.[9]

An important aid in the clinical diagnosis of syphilitic skin lesions is often rendered by the observation of the so-called pigmentary syphilide of the neck, which is occasionally seen either as a primary condition or as a sequel to a pre-existing erythematous or papular eruption. It occurs more often in brunettes and is an important corroborative evidence of syphilis after other manifestations of the disease have disappeared. Pigmentation in syphilis is favored by a cachectic condition of the individual and also by the presence of an old nephritis. In my service at the City Hospital it is not infrequent to see a syphilitic infection in a patient with an antecedent nephritis, in whom the development of pigmentation is a common occurrence and often very marked.

Recently Hoffmann[1] has ascribed to the spirochætæ a rôle in the diminution and increase of pigment in specific lesions. He found that in the areas invaded by the organisms the pigment in the epidermis was entirely lacking or very much reduced in amount. This depigmentation he considers the result of a local action—the body toxins—of the spirochætæ. The deeper marginal pigmentation surrounding spots of leucoderma is probably brought about by their peripheral progression, which occasions at first an increase and later, by intensity of action, a disappearance of pigment. The dif-

7. Ziegler's Beitr., 1907, xl, 409.
8. Verhandl. der Deutsch. Patholog. Gesell. iii.
9. Die experimentalle Syphilisforschung nach ihrem gegenwärtigen Stande; monograph, 1906.

fuse bronzing of the skin, seen especially about the neck, he believes to be due to the action of the spirochætæ on the suprarenals, for which they appear to have a special predilection.

The conditions from which syphilis is to be differentiated are tuberculosis, lichen scrofulosorum, blastomycosis, leprosy, epithelioma and drug eruptions. It often requires the minutest examination to draw a distinction between specific lesions and lupus, as exemplified in several specimens in my collection, notably a syphilide from the flush area of the face (Fig. 12) and another from the back of the finger. The latter had been diagnosed clinically as a lupus. The following points may serve as a guide: In syphilis there is a greater degree of proliferating endarteritis and other vascular changes; many of the giant cells are incomplete and can be traced to the vessels, and progressive and retrogressive changes are more rapid than in lupus.

The small follicular lesion presents a picture so closely resembling that of lichen scrofulosorum that it can scarcely be differentiated from it microscopically, and we are obliged to take into consideration the clinical features, as the age of the patient, the presence of concomitant symptoms of syphilis and the absence of scrofulosis.

In blastomycosis and leprosy it is such a simple matter to demonstrate their respective organisms in the tissue that the histologic changes are of secondary importance. Epithelioma is readily excluded by the presence of an epithelial growth in the corium.

The most frequent drug eruption that comes into question is the bromid, the lesions of which present epithelial hyperplasia with miliary abscesses and a diffuse infiltration of round and polynuclear cells, often with eosinophiles through the derma. Giant cells and vascular sclerosis are lacking.

All clinicians have observed that certain specific lesions yield to treatment with great facility, while others are obstinate in their response to therapeutic measures. It does not seem possible from ordinary histologic examinations to offer any explanations or draw any conclusions as to why this is the case. It may be that in one the spirochætæ are more malignant and in another the resisting power of the patient lowered. On the other hand, the reason may be sought on anatomic grounds, the implication of certain structures, as the vascular apparatus, for instance, where proliferation may interfere with the permeability and absorption of the therapeutic agent. However, these are simply hypothetical questions for which as yet no satisfactory solution is offered.

DISCUSSION.

DR. A. RAVOGLI, Cincinnati, said that, although the alterations in the blood vessels produced by syphilis have been well recognized, it is difficult to understand how they are affected in that way. We do not know whether the blood, carrying the spirochætæ, affects first the intima or the adventitia. He has come to the conclusion that the adventia is first affected and then the intima, probably not from the spirochætæ in the blood current, but from the spirochætæ carried to the tunics from the lymph-vessels. He has been fortunate enough to secure one very fine specimen showing two spirochætæ just inside the adventitia surrounding the vessels. He was unable to photograph these small micro-organisms. The examination of the specimens of syphilitic tissues all show the tendency of the tissues to hyperemia and proliferation, the same as is found in leprosy and tuberculosis. He believes this peculiar proliferation to be the result of irritation produced by the presence of the spirochætæ in the connective tissue.

DR. W. H. MOOK, St. Louis, emphasized the difficulty of distinguishing between tuberculosis and the tertiary lesions of syphilis. He had in mind the two cases under Dr. M. F. Engman's and his own care of the frambesial form of syphilis, in which the diagnosis of tuberculosis verrucosa cutis or syphilis could be made. Sections showed typical plasma and giant cells, and it was only after two months of antisyphilitic treatment that the diagnosis of syphilis was decided on. Dr. Mook said that the differential diagnosis by histologic methods is sometimes very difficult in these cases, especially where there is any complicating infection.

DR. W. G. GOTTHEIL, New York City, said that he had seen very few photomicrographs equal to those illustrating Dr. Fordyce's paper. The usual picture of a syphilitic lesion bears such a close resemblance to so many other things, he said, that work of this kind, which gives us some definite data for the recognition of syphilitic lesions, is especially valuable.

DR. M. B. HARTZELL, Philadelphia, said that the difficulty in making a microscopic diagnosis between the lesions of tuberculosis and syphilis and some other infections is not to be wondered at when we recall that all these lesions are probably due to the presence of toxins in the blood. We formerly supposed that they were due to the direct presence of the micro-organism which is the cause of the disease, but we now know that the active agent in the production of most of the tissue changes is some toxin circulating in the vessels, and in consequence of this, the most striking changes are such as occur in the vessels themselves.

DR. CHARLES A. KINCH, New York City, said that we should look to the lymphatic system for the tissue changes produced by syphilis rather than to the blood vessels. The changes in the blood vessels are secondary to those in the lymphatic circulation.

DR. JOHN A. FORDYCE, New York City, said, in reply to a question by Dr. Schamberg, that to some of the types of giant cells in syphilis it is difficult to assign any origin. In other cases it is very easy to trace their development to obliterative changes in the vessels. The usual type seen in late syphilis is the Langhans giant cell, the peripheral nuclei of which are the proliferated endothelial cells of the smaller vessels, he has, however, encountered the myeloid cell in sections which could also be assigned to a vascular origin. He interpreted these nuclei as leucocytes entangled in a thrombus formation or endothelial cells which, through rapid proliferation, had lost their normal relations. In regard to the primary involvement of the blood or lymphatic vessels, to which Drs. Ravogli and Kinch referred, Dr. Fordyce said that in the early stages of syphilis, it is probably the lymphatic and in the later stages the larger blood vessels in which the chief changes take place.

Cream Puff Poisoning in Buffalo.—There have been many cases of ptomain poisoning in Buffalo from eating cream puffs and chocolate éclaires said to have been obtained from Faxon's bakery. Dr. Andre Le Coq, a chemist of Paris, France, who investigated many cases of poisoning from cream puffs and éclaires in Paris last summer, stated that the toxic action is always the fault of the eggs, never of mineral poison introduced accidentally, nor of the other ingredients of the cream. In a report to Mr. Faxon, Dr. Le Coq states: "The white plays a more important part than the yolk and it is generally at fault when the poisoning is due to fresh eggs, since it is commonly beaten up raw, while the yolk is sterilized by cooking. The microbes in it find in the sugar, milk and gelatin of the custard an extremely favorable culture medium. The yolk does its work when the poisoning is due to decomposed eggs, for cooking can not destroy the toxins and ptomains of putrefaction. Chemical analysis shows the presence, in the poisonous cakes or in the bodies of the victims, of alkaloidal substances not identifiable with any hitherto known, but as these analyses have been made after a considerable lapse of time, it can not be positively affirmed that these toxins are not simply due to putrefaction." It is safe to conclude that, in hot weather, éclaires, cream puffs and the like should be eaten within twenty-four hours after they are made. An investigation is being made by the department of health.

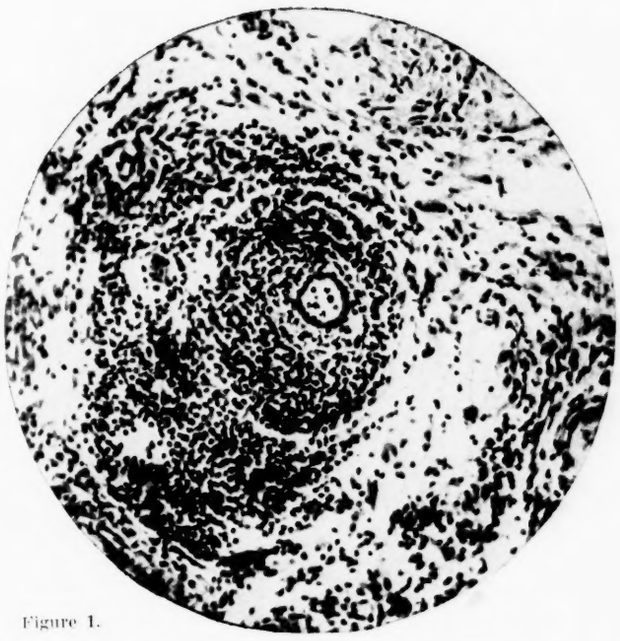


Figure 1.

Figure 2.

Fig. 1.—Chancre of the penis. (Zeiss 8 mm., comp. oc. 4.) An early lesion with mantle of round and plasma cells about vessels. The latter are increased in number and show an endothelial proliferation. The intervening connective tissue contains hyperplastic fibroblasts and a few plasma cells and lymphocytes.

Fig. 2.—Chancre of the penis. (Zeiss 8 mm., comp. oc. 4.) An older lesion still showing the ensheathing of the capillaries with lymphocytes and plasma cells, but with the infiltration more diffusely distributed through the remaining tissue. All the vessels have a proliferated lining. In the center is seen a longitudinal section of a capillary.

Figure 3.

Figure 4.

Fig. 3.—Small papular syphilide, *Lichen Syphiliticus*. (Spencer 1 in., comp. oc. 4.) Illustrating the follicular nature of the lesion. The process extends along the hair follicle into the cutis below the hair papilla and consists of a reticular structure with round, plasma and connective tissue cells in its meshes. Inside the area many of the vessels are completely obliterated; others are thrombosed and simulate giant cells. At the periphery of the infiltration a few engorged vessels are present. Away from the perifollicular part the vessels are thickened and sheathed by a few round and plasma cells. The coil glands are surrounded by the same cellular elements and are the seat of a marked fatty degeneration. Two outgrowths from the affected hair follicle penetrate the active process. The epidermis presents no noteworthy changes.

Fig. 4.—Papular syphilide. (Spencer ⅙ in., Zeiss comp. oc. 4.) A lenticular papule removed in the early stage of the disease, showing acanthosis of the epidermis, with dense infiltration of leucocytes and necrosis of the upper layers. In the papillary bodies there is slight sheathing of the vessels with round and plasma cells. The lesion is produced chiefly by epidermic hyperplasia.

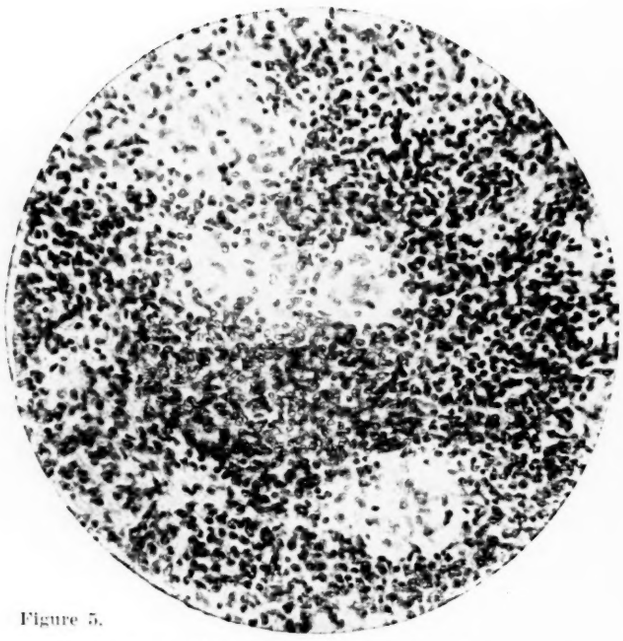


Figure 5.

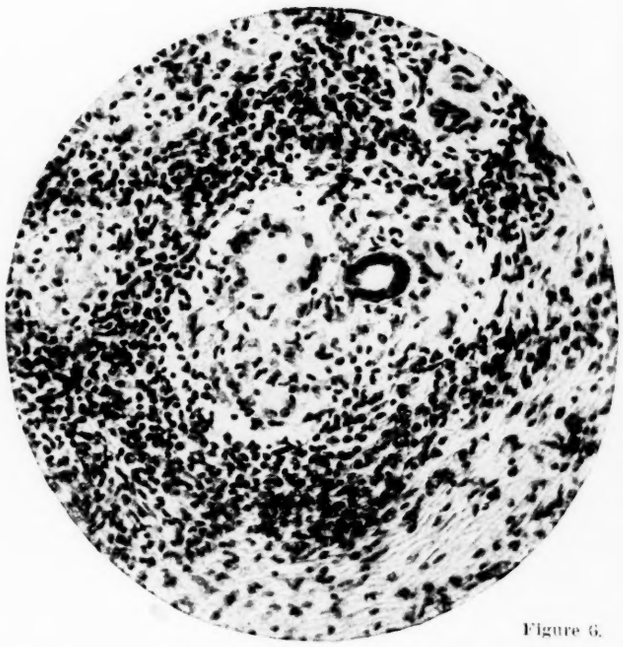
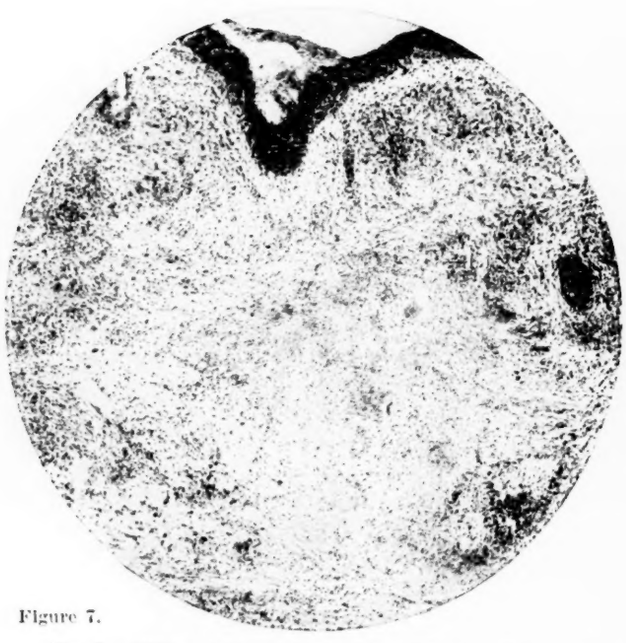


Figure 6.

Fig. 5.—Tubercular syphilide of the face. (Spencer ¼ in., Zeiss comp. oc. 4.) Showing obliteration due to endothelial proliferation and mantling of the transformed vessels by round and plasma cells.

Fig. 6.—Tubercular syphilide. (Zeiss ¼ in., comp. oc. 4.) A section showing obliterated and thrombosed vessels with a perivascular infiltration of round and plasma cells. A number of the vessels show simply an endothelial proliferation. The one in the center is, in addition, thrombosed and simulates a giant cell.



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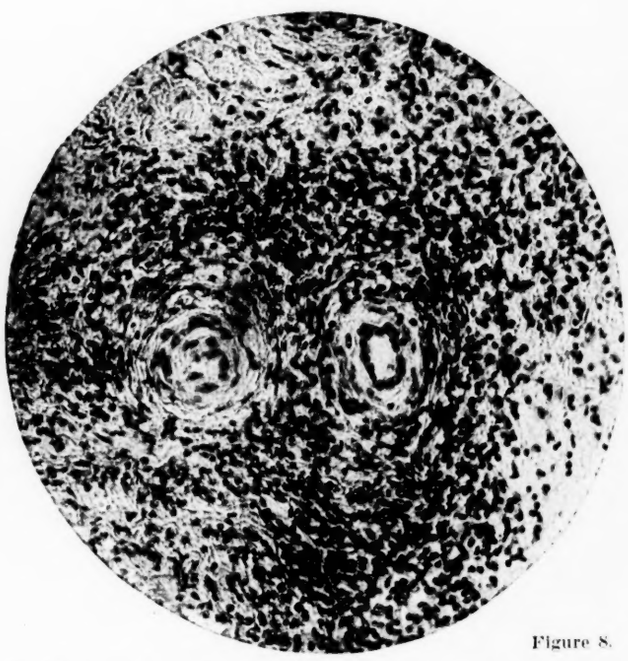
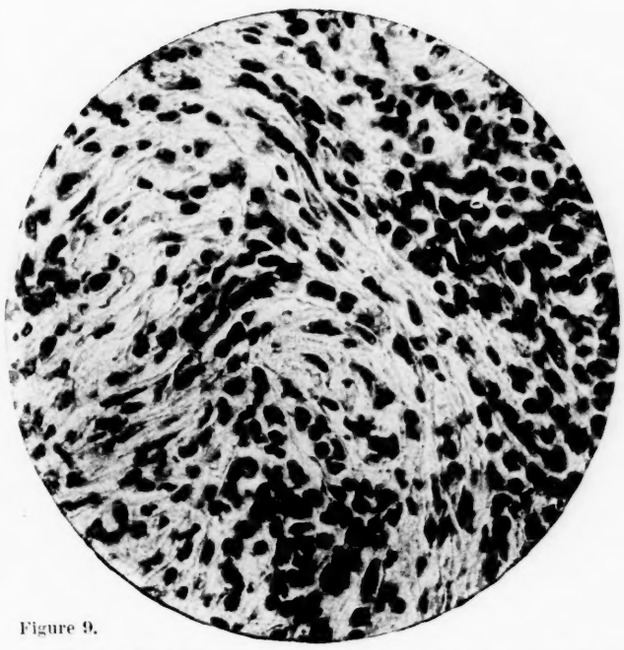


Figure 8.

Fig. 7.—Miliary gumma of the skin. (Spencer 1 in., comp. oc. 4.) The cutis is uniformly infiltrated with round, plasma and proliferated connective tissue cells and here and there shows areas of caseation. One is seen in the illustration in the middle third of the corium just to the right of the median line. The vessels have their caliber reduced in size or are entirely obliterated. The epidermis is thinned and its pegs are flattened out.

Fig. 8.—Symmetrical atrophy of the skin with syphilis. (Spencer ¼ in., Zeiss projection oc. 2.) Cross sections of an artery and a vein. The former shows a proliferation of its intima and adventitia with narrowing of the lumen; the latter is completely occluded by intimal proliferation. Surrounding them is an infiltration of round and plasma cells.



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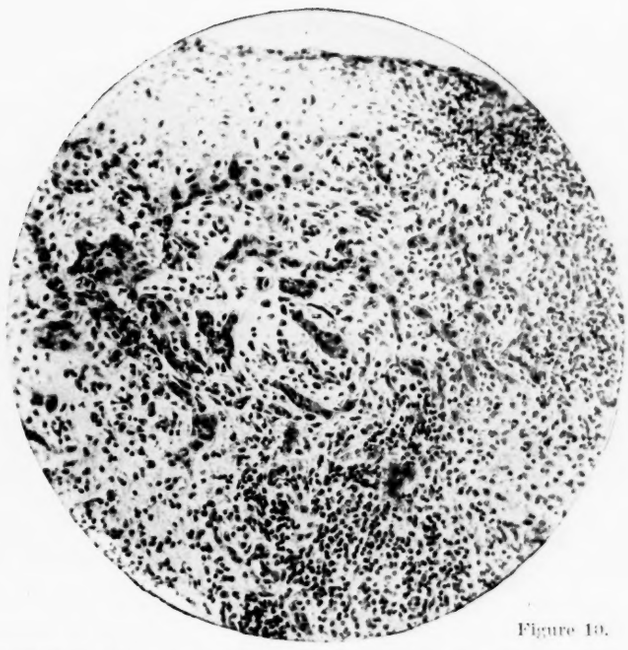

Figure 10.

Fig. 9.—Syphilitic laryngitis. (Spencer ¼ in., comp. oc. 4.) A productive inflammation of the larynx, showing hyperplasia of the connective tissue and an inflammatory infiltration of round cells and large numbers of plasma cells. The vessels are the seat of an endarteritis or panarteritis.

Fig. 10.—Epithelioma developing on a syphiloma of the lip. (Zeiss 8 mm., comp. oc. 4.) One portion of the lesion shows an ulceration extending to muscle of the lip. It is the seat of an intense infiltration of lymphocytes, through which are scattered some plasma and many polynuclear cells. There is a marked increase in the blood vessels and some hemorrhage is present. A number of the vessels are dilated and filled with blood, their walls presenting no perceptible change. Others are simply thrombosed, or again, their walls are thickened and the lumina occluded by proliferated endothelium. Several giant cells with peripheral nuclei are traceable to vascular changes. At the edge of the lesion are seen fine processes of proliferating epithelium penetrating the derma.

Figure 11.

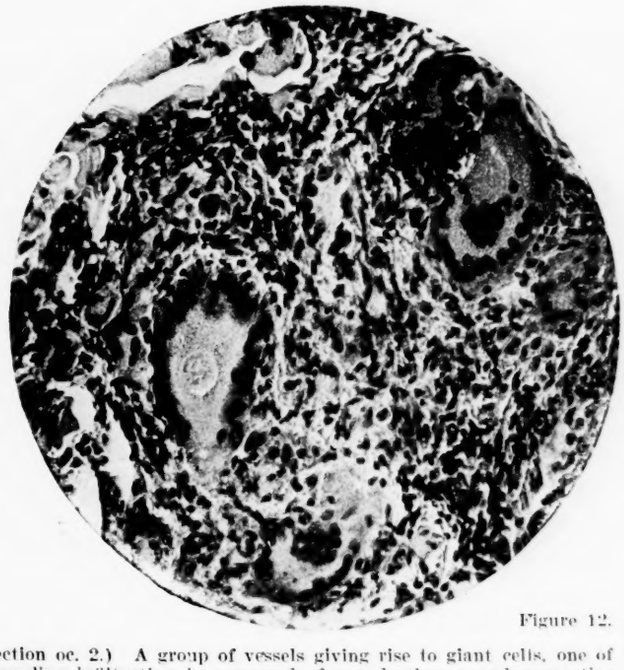

Figure 12.

Fig. 11.—Serpiginous syphilide of the thigh. (Spencer ¼, projection oc. 2.) A group of vessels giving rise to giant cells, one of which shows very distinctly the double row of nuclei. The surrounding infiltration is composed of round, plasma and connective tissue cells.

Fig. 12.—Late syphilide of the nose simulating hypertrophic lupus. (Spencer ¼ in., projection oc. 2.) A section through an area containing a group of capillaries which have been completely obliterated and present the appearance of giant cells. The connective tissue is increased in volume and pervaded by fibroblasts, round cells and plasma cells.

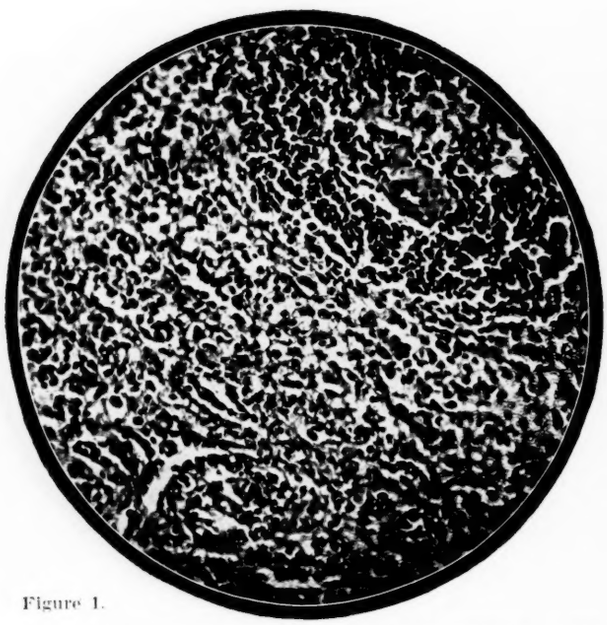

Figure 1.

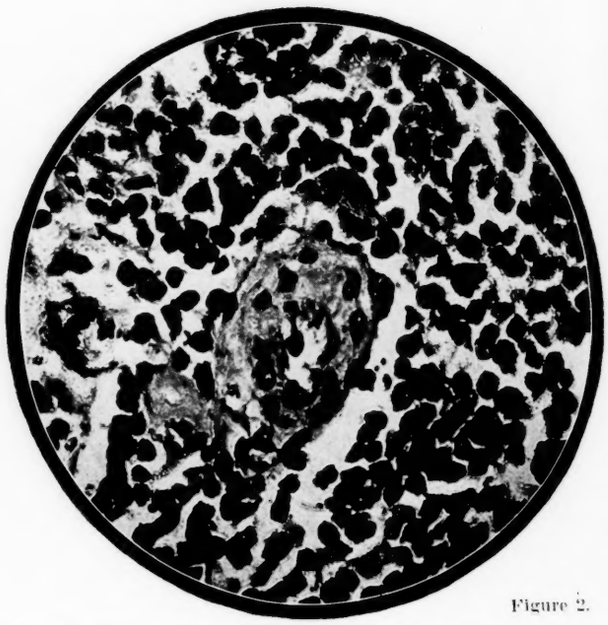

Figure 2.

Fig. 1.—Photomicrograph of spleen in uncinariasis, × 200. By Dr. W. M. Gray. All the sections from which these four illustrations were made were from the organs of two individuals dying of very extreme and uncomplicated uncinariasis, chronic type. Hb. of one case of 10 per cent. The sections are from 4 to 5 micra in thickness. The specimens were hardened in Zenker's fluid.

Fig. 2.—Photomicrograph of spleen in uncinariasis, × 500; same specimen as in Figure 1. Showing central artery, Malpighian corpuscle and hyaline degeneration. By Dr. W. M. Gray.

Figure 3.

Figure 4.

Fig. 3.—Photomicrograph of bone-marrow in uncinariasis, × 750; A, group of eosinophilic myelocytes; B, myeloplax. By Dr. W. M. Gray.

Fig. 4.—Photomicrograph showing large phagocytic cells in blood channel of a hemolymph gland in uncinariasis. These cells have engulfed great numbers of red cells; × 750. By Dr. W. M. Gray.

UNCINARIASIS, ITS DEVELOPMENT, COURSE AND TREATMENT.*

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AND

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WASHINGTON, D. C.

In this paper we purpose to confine our attention to the disease uncinariasis, inasmuch as a detailed description of the methods of the Porto Rico Anemia Commission in combating the present epidemic in Porto Rico has been made the subject of other papers written by us. Suffice it to say that, at the beginning of its operations, the commission found itself confronted by an epidemic affecting about ninety per cent of the rural population of the island, with an average of 20 per cent. to 25 per cent. of the total death rate for some years previous to the year 1905 (*Health Reports of Porto Rico;* deaths from anemia, 1898-1904, inclusive).

Our experience extends over the period 1899-1906, in the last two years of which the commission treated about 30,000 persons, fully 12,000 of whom came under our personal care and attention. Dr. Pedro Gutierrez, of Porto Rico, the other member of the commission, shared with us the difficulties of that work and took an active part in conclusions drawn from it. He is now chairman of the present commission, which has already treated, since June, 1906, about 85,000 patients.

UNCINARIAL DERMATITIS.

We believe the skin route to be the only efficient mode of invasion of *Nectator americanus* in producing uncinariasis, as infections by the mouth are not only rare, but, if thus consummated, the larvæ are so few in number as to be an insignificant factor in producing symptoms. That larvæ may be introduced into the digestive canal by the mouth and become parasitic therein seems to have been proved. Ninety-six per cent. of our patients acknowledge having had "mazamorra" or ground itch, a lesion abundantly shown to be due to invasion of the healthy skin by these larvæ, and the well-shod were practically never infected, though living in the midst of this tremendous epidemic. We feel justified, therefore, in considering that the remarkable claim of Loos, Claude Smith and others, has been established on a sufficiently extensive scale as the usual mode of invasion, in Porto Rico, at least.

Contact of the skin with mud laden with encysted larvæ for a time not necessarily longer than from a few minutes to half an hour, causes first itching, then redness and swelling of the part, with the formation in a couple of days of papules, rapidly becoming vesicles. In favorable cases pustulation does not occur, but when the invasion of many larvæ has profoundly inflamed the part and the ordinary organisms of pus have gained a foothold, not only do pustules form, but extensive ulceration may result which is extremely resistant to treatment. In the case of an American officer, the severity of these ulcers caused his invaliding to a military hospital in the United States, the manner of his infection having been from mud which during a "hike" had oozed between the top of the shoe and the legging.

Extensive ulceration and the scars left by it on the lower third of the leg were very frequent among our patients. Such ulcers were those dubbed "tropical" by the uninitiated, "syphilitic" by those whose knowledge of the country people of Porto Rico was not extensive.

Generally, in milder invasions the dermatitis subsides in a week or two. We believe that skin infection can take place without manifest dermatitis, judging from a number of cases in which mouth infection seems to have been improbable. In fact, we accomplished, by the skin route, an infection of a guinea-pig which was so severe as to cause its death in three and a half days, although the outward signs of ground itch never appeared.

It is of paramount importance to distinguish between the laboratory diagnosis of uncinariasis and the clinical picture of the disease. The presence of ova of this parasite in the feces is not evidence of the clinical entity now to be described; even ova in large numbers. True it is, that feces heavily laden with eggs are liable to pertain to an anemic individual, but this is not always so, as we have repeatedly seen great immunity enjoyed by some whites, and especially notable racial immunity of the negro to the effects of infection. Beyond a certain point, and in conditions of reduced vitality from lack of food or the presence of other diseases, this relative immunity may be, and often is, lost. The same immunity we have noted in the negro is said to be enjoyed by Asiatics. As a rule, however, heavy infections cause uncinariasis. Usually these infections are multiple and cumulative in their effects on the host, and the anemia and other symptoms come on gradually. At times severe single infections cause an acute form of the disease. All depends on the relative number of larvæ in the infected earth, a factor dependent on density of a population which practices earth pollution; and the exposure of the skin to invasion, in tropical countries chiefly through bare feet. It is of little practical importance to attempt the determination of the minimum average number of uncinariæ that will produce symptoms, but generally the greater the number harbored by an individual, the more abrupt will be the onset, the more pronounced the symptoms, and the more rapid the course of the disease. Thus we may speak of acute and chronic, mild and severe cases, with every gradation from one to the other; also of a chronic case becoming acute when additional infections take place. This latter occurrence is frequent in places like Porto Rico, where opportunities for constant infection abound.

SYMPTOMS, COURSE AND USUAL COMPLICATIONS.

Uncinariasis presents a most varied symptomatology and a full discussion of it can not be included here. We shall omit mention of symptoms of minor importance and interest. A month or so after one or more such infections the subjects become languid and mentally inactive. Indefinite, fugitive pains in the epigastrium annoy them and tenderness in the right hypochondrium may generally be elicited. Pain in the sternum and chest are commonly complained of and slight breathlessness after exertion and occasional palpitation of the heart are noticed. A febrile movement of from 37.5 C. to 38.5 C. (99.5 F. to 103.3 F.) is not uncommon, but it is apt to be overlooked. The preliminary symptoms are obscure and the patient sums up his ill-defined condition by stating that he feels unable to work.

Little by little the predominant feature of the disease, anemia, makes itself manifest. The fever disap-

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907. A portion of the section on symptomatology is omitted from THE JOURNAL. It appears in the Transactions of the Section and in the author's reprints.

pears, the hemoglobin goes steadily down and the train of symptoms dependent, in part, at least, thereon, come sharply into prominence. Most of the vague initial symptoms become positive. Headache, vertigo, tinnitus aurium, a louder and louder hemic murmur, weakening of the pulse and dyspnea ensue until, with the hemoglobin below 30 per cent., or even 20 per cent., graver signs present themselves. The pains in the sternum are an almost universal cause of complaint at this stage. An ever increasing debility and a more pronounced mental hebetude are noticeable. The patellar reflexes are generally reduced and later may even be abolished, and paresthesias of the lower extremities are common. Impotence in the male and amenorrhea in the female are constant and striking phenomena in severe cases and are by no means rare in moderate ones.

A very little more and the patient reaches that point where even the result of anthelmintic treatment is problematic. We now have before us a very sick patient. The circulatory system is profoundly affected. The heart, slightly hypertrophied at first, is now not only weakened but is often dilated, a condition adding to the already complicated picture the familiar lines of a broken compensation. Edema of the feet and legs and puffiness of the face now become a general anasarca, and pericardial, pleural and peritoneal effusions are apt to take place. The hemoglobin falls below 30 per cent., even to 8 per cent., and the muddy yellow, pasty pallor eloquently testifies to its great reduction. The patient is bedridden, passive to his surroundings and gradually passes away as if narcotized, save that in the fatal cases of acute cardiac dilatation, cerebral effusion or violent diarrhea supervene, not uncommon accidents in our experience.

The prognosis is generally good, even in severe cases, under appropriate treatment. Less hopeful are those complicated by persistent diarrhea, due to an enterocolitis, or other grave accident, especially marked anasarca from cardiac dilatation. To show, however, what results may occasionally be obtained by anthelmintic treatment, an example mentioned in our first report is worthy of quotation:

> The patient's whole body was water-logged. She could hardly walk, could not see, the eyelids looked as if dry cups had been applied, and when her pulse was taken, the impression of the whole hand was left deeply sunken; yet she recovered and became perfectly well, rosy and fat, running from 20 per cent to 90 per cent. hemoglobin.

Extremely low percentage of hemoglobin is not in itself an unfavorable sign. With a few exceptions, our cases of 10 per cent. to 15 per cent. responded readily to treatment; even some of 8 per cent. and 9 per cent. made complete recovery.

MORBID ANATOMY.

Despite the great amount of literature on uncinariasis in recent years, no subject is so barren of data as its pathologic anatomy, and yet this is decidedly one of its most interesting and instructive features. Not only are uncomplicated cases, suitable for the drawing of conclusions, difficult to acquire, but the consent of the relatives to autopsies is by no means easy to secure. Above all, deaths occur far out in the country, and usually before an autopsy can be performed, postmortem changes are well advanced. The latter obstacle was our most troublesome one, as the death rate in our field hospital was very small; indeed, it was but one-third of one per cent. for the entire number of 18,865 treated between May and December, 1905, at all stations combined.

In spite of these difficulties, eleven out of twelve autopsies were made in such manner as to furnish accurate information, in so far as the gross anatomy is concerned; nine supplied us with tissue in a very good state of preservation for microscopic study. The minute anatomy of the other two is not included on account of the length of time after death at which the autopsy was made. Of the nine specified above, one subject was five years of age and had never received any anthelmintics, one was fourteen, and the remainder between twenty-five and fifty. Six showed extreme anemia, one other was an intense case and two more were moderately severe. Only two were complicated by other conditions; in one a healed lesion of pulmonary tuberculosis was found; the other presented the intestinal lesions of amebic dysentery. Nothing was shown in the latter to invalidate our conclusions.

GENERAL OBSERVATIONS.

As a rule, the body shows no emaciation and the amount of adipose tissue is apparently normal. There is not only much edema but all soft parts, including skin, muscle and internal organs, have suffered great change in color due to the intense anemia. The skin and subcutaneous tissue are very pale and sodden with fluid. The muscles are brownish gray, friable and often atrophied. On microscopic section the individual muscle-cells are frequently separated and the protoplasm seemingly starved and reduced in amount, an observation which, indeed, applies to nearly all organs.

On opening the abdomen, an excess of pale yellow or straw colored peritoneal fluid is observed, the amount reaching enormous quantities in certain cases where ascites is a prominent feature. In one of our cases this serum was reddish yellow, but no adhesions or other signs of inflammation were found. Serous effusion is also generally demonstrable in the pleuræ, pericardium and, sometimes, in the cerebral ventricles.

THE HEART AND LUNGS.

There was often hypertrophy, although, not rarely, a heart of normal size was encountered. It was not unusual to see an excess of pericardial fat. Not uncommonly, however, dilatation had occurred and the organ was remarkably flabby and easily torn. Microscopically, in two of three autopsies, brown atrophy was well marked and a slight degree of myocarditis was discovered. Fatty degeneration of the muscle fiber was clearly seen in two cases after fixation of the tissue by Fleming's solution. The separation of individual cells was particularly noticeable and this was irrespective of the fixing reagent employed.

The lungs were frequently the seat of edema and passive congestion.

THE LIVER.

This organ was practically never normal. Great increase in size was only once discovered, although never was there diminution. Its most frequent color was a light brownish yellow. In some cases it was very light yellow, soft and greasy to the touch and extremely friable. Microscopic sections demonstrated that it was often extensively affected in uncinariasis. Extreme fatty degeneration was the prominent feature of four cases and in two scarcely a normal liver cell could be found, the condition of the liver here simulating marked types of fatty changes in other diseases characterized by such changes. In none of our autopsies was fatty

degeneration absent. In its least exaggerated form it chiefly affected the outer third of the lobule.

In three cases there was increase of connective tissue in the portal spaces, but in two of them the change was only slight, and, in at least one, where there was great increase, the condition was probably due to chronic alcoholism. Connective tissue increase is evidently not a feature of uncinariasis. Daniel's observation that the liver contains considerable yellow pigment could not be confirmed, save in one case, although small amounts were found in others. The pigment was not stainable by potassium ferrocyanid. Extreme dilatation of capillaries was found in two cases.

THE KIDNEYS.

These organs were also profoundly involved. They were very pale and were apt to be slightly enlarged. As a rule, the capsule stripped easily. Microscopic sections showed us a practically constant picture of chronic parenchymatous or chronic diffuse non-indurative nephritis. In persons of middle age, who had suffered for some years from uncinariasis, there was increase in connective tissue, but this was marked in only one case. Usually, there was little or no connective tissue increase and polymorphonuclear leucocytes were conspicuous by their absence.

Changes were always found in tubules and glomeruli, but the convoluted tubules suffered most severely and fatty degeneration and desquamation in them was marked. The collecting tubules were much less affected. There was extensive exudation into Bowman's capsule with desquamation of its endothelial lining and much dilatation of the intracapsular space. Hemorrhages into Bowman's capsule, intertubular hemorrhagic areas and blood and epithelial casts, were found in four of the nine bodies sectioned, and the picture was that of an acute condition superimposed on the usual chronic one described. All four of these had received betanaphthol. In one case, yellow pigment was found, but only in small quantity. In two instances embolic abscesses existed.

STOMACH.

It was not usual to encounter uncinariæ in the stomach, although 83 were found in its lumen in an autopsy previously reported by us.[1] We discovered several adherent to the wall of this organ in this year's series. A gastric catarrh was common and marked dilatation was noted in two subjects.

INTESTINE.

The jejunum contained most of the uncinariæ found at autopsy. Some were unattached, others were adherent to the mucous membrane. In the first part of the duodenum were to be found most of the rest, a few being discovered in the ileum. None were encountered in the colon.

In more than one instance the parasites were alive twelve to fifteen hours after the death of the patient, whether attached or free. They were rarely red, generally white or grayish. On one occasion they were removed with some little force by fine forceps and placed in physiologic salt solution, where they lived and remained active for about sixty hours longer and then were killed for experimental purposes.

The lesion of the intestine is confined, as far as we know, to the mucosa. It was found to be a tiny superficial erosion, not a deep ulcer, as many suppose, about 0.5 mm (1-50 inch) in diameter and not usually characterized by any redness, save at one autopsy. These erosions were very difficult to find without a hand lens, unless a parasite had just been removed from its feeding ground, and the locality marked. The duodenum, and especially the jejunum, are the seats of a chronic intestinal catarrh and many times after we supposed that all parasites had been removed in the course of the examination of the intestine at autopsy, many more were found buried in the thick mucus which more or less completely covered them.

The rest of the intestine, and even the colon, is apt to share in less degree in the general chronic inflammation. Degeneration and atrophy of the mucosa of the intestine, as well as of the stomach, were commonly observed. We have purposely left to the last a consideration of the really striking changes in the spleen, hemolymph glands and bone marrow, as these are marked and, until now, neglected in all treatises which we have read on uncinariasis.

THE SPLEEN.

Most authors state that the spleen is not enlarged, but lead us to believe that it is normal. As a matter of fact, the spleen frequently is reduced in size, soft, and possesses a wrinkled capsule.

Dr. Rafael Cesteros, of Guayama, Porto Rico, the director of the commission's substation in that city, reporting on one autopsy, writes of this organ as follows:

> **The atrophy of the spleen attracted my attention. It was as small a spleen as I have ever seen in my professional career and at no autopsy, whether made for scientific or for medico-legal purposes, have I encountered this organ of such reduced dimensions. Its color was that of wine lees and its size was not greater than that of the kidney.**

Microscopic sections revealed in every one of the eight autopsies in which a portion of the spleen was preserved, a great paucity of lymphoid elements, even decided decrease in the protoplasm of the cells. The Malpighian corpuscles were greatly reduced in size, the cells were scanty and widely separated, and the central artery presented, almost uniformly, considerable hyaline degeneration. Not only were the tufts smaller than normal but they seemed fewer in number.

The apparent increase in connective tissue we explain by the decided reduction in lymphoid elements and blood, and it seemed relative rather than absolute, although in some instances, thickening of the capsule was observed. Pigmentation was only once very prominent, and the pigment was of the same character as that seen in the liver. There was unusually little blood in the organ.

HEMOLYMPH GLANDS.

The following notes were made by us at one of our autopsies:

> Great abundance of glands in the region of the abdominal aorta was noted, especially at its bifurcation. They were enlarged, and of a dull reddish hue, like pale muscle tissue. Some of these glands were as large as hazel nuts, yet there was not a trace of inflammation in the surrounding parts and the peritoneum over them was normal and glistening.

They were only sought for in one other autopsy and then were found with the same characteristics, but in smaller number. Microscopic section showed that they were hemolymph glands, usually of the type described as splenolymph glands. Mitoses and phagocytoses of red cells were noted.

1. Amer. Med., Sept. 5 and 12, 1903.

BONE MARROW.

The marrow of the midpoint of the shaft of the femur was examined in two autopsies. It was gravish red and very soft. Microscopic section disclosed, in addition to the changes described in the marrow of subjects dying of pernicious anemia, groups of eosinophilous cells, generally myelocytic. These cells were abundant, as were myeloplaxes. No attempt has been made to describe in detail the changes to be found in the organs referred to in this brief summary.

THE ANEMIA.

The anemia of uncinariasis is not merely such a condition as would result from repeated small hemorrhages. One of its marked peculiarities is its irregular eosinophilia and another is its severity at times in subjects harboring but few parasites, at others its failure to become marked in very heavy infections.

HEMOGLOBIN.

The average hemoglobin in 579 cases, taken at random before treatment, from among our 1904 series, was 43.09 per cent. Eight per cent. has several times been registered by both the Dare and the von Fleischl instruments. Fifteen to 20 per cent. was very common in severe cases and 35 to 50 per cent. was generally the range of moderate ones. The hemoglobin percentage is the steadiest guide to the condition of the patient, as a very low percentage may exist with a fair number of red cells, 0.5 being about the average color index.

Some phenomenal rises in hemoglobin were noted after simple expulsion of uncinariæ without any ferruginous or other regenerative treatment, rises which seem impossible were it not for the fact that fully as remarkable improvement takes place in the patient himself, the gain in healthy color testifying to the actual return of his blood to normal. For example: In one case, a woman, aged 38, with a hemoglobin of 35 per cent. on admission, there was a rise of 61 per cent. in 15 days, although but two doses of betanaphthol were given and 453 of the total number of 497 uncinariæ expelled.

We gradually learned that iron was not a necessary part of the treatment of uncinariasis, as a rule. Certainly a somewhat more rapid rise in hemoglobin occurred when iron was used, but the return to normal came about just as surely without it and we ceased to use it among our average cases, reserving its administration for obstinate ones in which blood regeneration was faulty and all parasites had been expelled. Blaud's pills seemed to us the best form of iron, as stated in our 1904 report, but it is a matter of but little importance, in the end.

In these cases of tardy rise of hemoglobin there was apt to be a period of about two months in which no marked increase was noted, when in the succeeding month the normal was reached by rapid strides. In others the hemoglobin rose steadily without being hurried in the least by large doses of Blaud's pills.

The following résumé of sixty cases in our 1906 series, is of interest in this connection. They are cases of patients in whom the hemoglobin was estimated on admission and discharge, and the actual number of uncinariæ expelled after each dose of the anthelmintic was determined. Twenty are cases of patients to whom betanaphthol was given weekly, with daily doses of iron in the intervals; thirty-two received thymol weekly and iron in the same manner; and nine received thymol or betanaphthol without the use of any drug in the interval. The patients were not always held in the hospital until the hemoglobin became normal, because an expulsion of all parasites was almost certain to be followed by the cure of their anemia, a fact abundantly demonstrated to us in the thousands of other cases under treatment as outpatients, and by our past experience:

Treatment.	Betanaphthol weekly; iron in intervals.	Thymol weekly; iron in intervals.	Betanaphthol or thymol; no drug in intervals.
Number of cases	20	32	9
Average initial hemoglobin, per cent.	33	32.8	42.6
Average days under treatment	40	37.3	17.3
Average rise, per cent., in hemoglobin for time specified	51	52.4	28.3
Average number of uncinariæ expelled	1,064	1,264	591
Average rise hemoglobin per cent. daily	1.2	1.4	1.6

Attention is invited to the fact that the cases treated without iron were less severe, as a rule, and that this alone explains why, with better recuperative power, the blood making organs were enabled to cause a greater daily rise in hemoglobin. Nevertheless, the advantages of iron, in average cases of moderate severity, are not seen to be very great. A fall in hemoglobin is the first sign of the anemia and this fall may be considerable, even as much as to 30 per cent, before the erythrocytes are greatly reduced in numbers. On the other hand, the rise in hemoglobin almost always lags behind the rise in red cells under treatment.

ERYTHROCYTES.

In our 1904 series of 61 cases in which weekly blood counts were made until the normal was reached, 2,406,416 erythrocytes per c.mm. was the average. The lowest count made was 754,000 per cmm. There was polychromatophilia and, in severe cases, poikilocytosis with many macrocytes and microcytes. Normoblasts and megaloblasts were not uncommon, but the latter are generally much in the minority.

LEUCOCYTES.

There is no leucocytosis which is constant, but slight increase in leucocytes is at times seen, especially in acute cases. In chronic cases there is apt to be leucopenia. Our average white cell count was 8,009 per cmm. on admission. In making differential counts, 250 leucocytes were classified, and in this connection we wish to emphasize the decided tendency of leucocytes to degenerate. Stimulation cells of Türck were frequent in some cases, but their appearance was very uncertain and we were unable to assign any special significance to them. Myelocytes, generally eosinophilic, were seen occasionally, but were not common.

Eosinophilia is the chief feature of importance. It is strange that Boycott and Haldane lay so much stress on the importance of eosinophilia, from a diagnostic point of view, for in the more serious cases it is liable to be absent. In 1904 we called especial attention to our belief that eosinophilia was of great prognostic importance and have noticed that some German and Spanish writers subsequently express this same view. Very chronic cases, of severe type, poor resisting power, and lack of blood regeneration, rarely show eosinophilia, or, if at all, only to a slight degree. A rise in eosinophilia

is of good prognostic significance and their fall, with lack of improvement in the symptoms, is not a good omen. In general, good resistance to the hypothetical toxin of uncinariæ is expressed by eosinophilia.

TREATMENT.

The prime object of treatment is to expel the uncinariæ, and our choice of the anthelmintics will naturally be the one most rapidly and easily effecting this result.

We attempted to ascertain the relative efficiency of male fern, thymol and betanaphthol by counting the actual number of uncinariæ expelled by each dose. During the twenty-four hours following the administration of the drug, all the feces evacuated by the patient were passed into an individual vessel and treated with a 10 per cent. formalin solution, which destroyed, in most instances, practically all offensive odor. As a rule, the evacuations were liquid, but if not, water was added. The twenty-four hour feces were strained through cheesecloth and thoroughly washed. The residue, which usually was small in quantity, was transferred with a porcelain spoon to a small dish or cup, care being taken to pick off with forceps any worms remaining on the cloth. The counting was done in a trough of convenient size, made by nailing a narrow strip on each side of the board and painting the inside black. A small quantity of the fecal residue was placed in the trough and water was added, a few drops at a time, washing it away bit by bit, the trough being inclined barely sufficiently to cause a flow. The worms can be easily detected against the black surface and be picked out by forceps. Care must be taken that the water is not added too rapidly or some of the worms may be washed away. Lumps of feces should be broken up and all fragments of food, etc., inspected for adherent worms. While hardly esthetic, these operations are seldom particularly offensive.

The results of our counts were interesting and indose of either of these preparations of filix mas was given. We used first an ethereal extract of this drug from one of the most reputable German pharmaceutical laboratories, but although it caused constitutional symptoms, practically no uncinariæ were expelled by it. As we had purchased the drug from a local pharmacist, we thought that possibly it had been some time in the tropics and had become deteriorated from climatic influences, to which it is said to be very susceptible. A fresh solid extract was then obtained direct from one of the best known pharmaceutical houses. It was immediately put into use, with no better results as an anthelmintic, although the constitutional effects were much more marked than those of thymol or betanaphthol.

The highest number of uncinariæ expelled by a single dose of either of these preparations of filix mas was eight, while one of the same patients later expelled 3,686 uncinariæ after a single dose of three grams of thymol. So much time had been spent in these unfruitful trials that had we ordered other preparations of the drug, we could not have completed a series of counts owing to the short time left for the completion of our work. Considering the success which has followed the use of male fern in Germany, we are at a loss to understand why we should have scored such a failure with it, unless this drug very rapidly becomes worthless in warm countries.

In testing these anthelmintics, our intention was to administer them at weekly intervals and to continue for two weeks after uncinariæ ceased to be expelled. We found that it was often impossible to hold the patients in hospital long enough to do this, because by the time they had expelled most of their parasites, they felt so much better that they insisted on going home, and if denied permission to do so, would desert. Hence we were obliged to throw out many counts as incomplete, but we did include those in which less than twenty uncinariæ were expelled by the last dose given, even though there was no opportunity to administer later doses, which might have brought away a few more in some cases and none in others. This slight inaccuracy does not materially affect our results.

In the preliminary report, 1905, of the Anemia Commission, is published a table giving the number of uncinariæ expelled by each dose of betanaphthol. Reference to this table will show with what heavy infections we were dealing; the lowest being 73, the highest 4,395, and the average 1,027. The amount of anthelmintic is not stated, as it varied even in the same patient at different times. The dose had to be based on the age and condition of the patient, and thus the table represents the actual results obtained by these vermicides when properly used in practice. The following figures express the comparative percentages of the total number of uncinariæ expelled by each of these drugs in 70 cases:

PERCENTAGE EXPELLED OF THE TOTAL NUMBER OF UNCINARIAE HARBORED BY THE INDIVIDUAL.

Dose.	Average of 40 patients treated with thymol.	Average of 30 patients treated with betanaphthol
1	76.85	72.24
2	92.89	88.12
3	97.55	93.67
4.	99.06	96.57
5	99.80	98.71

Some time after these counts were begun it was discovered that, at times, all the uncinariæ killed by the anthelmintic would not be evacuated during the first twenty-four hours, even though there had been free purgation, but that others came away in the second and, more rarely, the third twenty-four hour period. Thus Boycott and Haldane are mistaken in supposing that after the twenty-four hours the dead uncinariæ are digested. No doubt some of them are, as we found partially digested ones, but we think their statement too sweeping. Had we recovered all the worms appearing on the second and third days, we would have recorded a slightly greater number expelled, particularly after the first and second doses, but the percentages of results would have been changed scarcely more than a fractional part.

There is a surprising equality of anthelmintic effect after five doses of either drug, though thymol shows a somewhat greater rapidity under equal conditions of proper preparatory treatment. However, when the preliminary purge and, more especially, the abstinence from solid food for a day are omitted, betanaphthol shows much less favorably. We used some hundreds of pounds in the out-door clinic, the patients taking the medicine after returning to their homes. They generally took the purge, but the directions to abstain from solid food were more honored in the breach than in the observance. Many of those to whom betanaphthol was given kept returning week after week and at each time revealed ova of uncinariæ in the feces. In other words, the presence of food in the bowel seemed to interfere with the efficiency of betanaphthol more than of thymol, for those who took thymol in their homes expelled their parasites almost as rapidly as those whose diet we could supervise. Frequently in these resistant cases a dose or two of thymol caused a complete disappearance of ova from the stools, while increased doses of betanaphthol did not have so marked an effect.

Betanaphthol is not only less efficacious, but it is more

dangerous. It has, at times, an irritant effect on the kidney, setting up an acute toxic nephritis in an organ so often the seat of chronic parenchymatous changes. This effect was not common, but the accident was so serious as to warrant our return to thymol as a much safer vermicide. Thymol on rare occasions may irritate the kidney, but its effect is much less severe. It may produce, infrequently, more or less severe collapse. The chief objection to its use was its irritating effect on the bowel and several times, we believe that enterocolitis has been initiated by its administration.

Eucalyptol is now being studied by the present commission, but their report has not yet been made. Both thymol and betanaphthol were administered in the same manner except that one-half as much betanaphthol was used at a dose as thymol. Betanaphthol in larger doses did not seem to give proportional results.

The patient was required to abstain from solid food during the day and at night 25 grams of sodium sulphate was given. The next morning, providing free purgation from the salts was secured, after a glass of hot milk or on a fasting stomach, one-half of the anthelmintic was given and repeated in two hours, followed, about noon, by another purge which may be omitted if the bowels are moving freely. This procedure was repeated each week until ova disappeared from the feces.

We have given thousands of doses of thymol without having known of a case of poisoning from it, notwithstanding that at times, we knew that, contrary to our orders, alcohol in some form had been taken to relieve the dizziness and other disagreeable effects sometimes produced by thymol in large doses.

In choosing the anthelmintic we have to be governed somewhat by the circumstances of the case, condition of the patient, and so forth, but, all things being equal, we decidedly prefer thymol for general use. When it is not possible to use it, betanaphthol is an excellent substitute. The taking of either is unpleasant and, naturally, we want to use that one which the least number of doses need be taken to obtain the greatest result.

Our thanks are due to Drs. Carroll, Russell and Gray of the laboratory of the Army Medical Museum and Dr. Rosenau of the Hygienic Laboratory, Washington, D. C., for many courtesies extended us in our work on the morbid anatomy of uncinariasis and acknowledgment is made of painstaking services rendered by First Class Sergeants Neat and Britton, Hospital Corps, U. S. Army.

EXPERIMENTAL ANEMIA.*

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When one considers how incomplete is our knowledge of the anatomy and physiology of the hematopoietic system it is perhaps not remarkable that the diseases of that system should have remained so long shrouded in obscurity. Although the clinical pictures of the anemias and leukemias are sharply defined, their pathology still offers many problems. When in his classical description of pernicious anemia Addison noted that it occurred "without any discoverable cause," he stated the first and greatest problem of that disease and one which a half-century of investigation has not been able to solve, although by clinical, pathologic and experimental studies it has been able to narrow the field of search somewhat. However, this, the etiology of the disease, still remains its great problem.

The second problem arose at a time when the clinical picture, especially the blood picture of this anemia described by Addison, had not been sharply defined, and it arose from the description by Biermer and many others of progressive and pernicious anemias following many well-defined causes, causes almost too numerous to catalogue, and causes which in general are followed by an anemia of the so-called secondary type. This difficulty was partially cleared up by the clinicians who showed that the Addison anemia had a distinctive blood picture. It has left still unsettled, however, the question as to whether or not at some stage secondary anemias of varied causation may not present the blood picture of pernicious anemia.

So the second problem may be stated as the relation of the primary and secondary anemias. To express it more fully, if pernicious anemia be not always due to the same cause, but to many causes, and among them to those that at times produce anemias of the secondary type, what is the factor which determines the type of blood picture?

The third problem is one that arose from the pathologic investigations of the disease. Cohnheim discovered the characteristic bone-marrow lesion of the disease, and it was later thoroughly studied by Ehrlich and others, who emphasized its greatly increased megaloblastic content as pathognomonic of the disease. As a result of these studies many have considered the bone-marrow changes as the primary lesion in the disease and accountable for the blood changes and other lesions.

Exclusive of the bone-marrow changes the pathologic study has revealed in many cases no lesions that could not be considered as secondary to the anemia, with the exception of the lesion emphasized chiefly by Quincke and Hunter. This lesion is the excessive deposition of iron-containing pigment in the liver and kidneys especially, though occurring also in the spleen and other organs. These deposits were interpreted as the result of the action of a hemolytic substance on the red blood cells and formed the basis of the theory accepted by many that the disease is essentially a hemolytic process and that hemolysis occurring in the circulation is responsible for the other lesions of the disease.

This theory received additional support from the facts that infection with the intestinal parasite, *Bothriocephalus latus,* gives the typical picture of pernicious anemia and that an extract of the worm has been shown experimentally to produce hemolysis in dogs. Yet it became evident that hemolysis alone is not adequate to explain the disease, for hemolysis with deposition of blood pigment is a factor in secondary anemias not caused by hemorrhage.

The third problem then concerns the pathology and the pathogenesis of the disease, the value of the claims as to the primary lesion. Is there a primary bone-marrow lesion or is there an original hemolysis with subsequent changes in the marrow?

Briefly, then, the problems of pernicious anemia concern its entity as a disease and the establishment of the blood picture, its relation to other types of anemia, its pathogenesis and its etiology. All of these are not subject to experimental investigation. The establishment of the blood picture and of the disease as an entity has been done by clinicians and pathologic anatomists. A

* Read in the Section on Practice of Medicine of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

definite blood picture characteristic of the disease has been made out, and it has been determined that there is a disease corresponding to Addison's description with this definite blood picture and with pathologically a characteristic bone-marrow lesion, signs of hemolysis and no lesion otherwise, apparently adequate to explain the anemia.

For the etiology one must look to further clinical and pathologic study. On the other hand, the relation to secondary anemia, and the pathogenesis of the disease lend themselves to experimental investigation. The work of Quincke, Hunter and others in establishing the fact that hemolysis is a large factor in the production of the anemia furnished the lead along which profitable experimental work has been done. In this work the extensive study of hemolytic processes, stimulated by the Ehrlich hypothesis, has been of importance.

In the first place, it has been shown conclusively that the blood picture of pernicious anemia can be produced experimentally in such animals as the dog and the rabbit, the animals used most extensively.[1] This picture simulates the picture in human blood as closely as any pathologic picture produced in animals simulates the picture in man produced by the same etiologic agent. The blood picture in rabbits shows the nucleated red cells both megaloblastic and normoblastic, often occurring in showers. It shows further the characteristic changes in non-nucleated red cells: a variation in size, with the predominant cells above the average normal diameter; a certain amount of poikilocytosis, polychromatophilia and in many cases a granular basophilia and even an increased color index (Tallquist). Even the reduced white cell count with a relative increase of the large mononuclear variety may occur. In short, practically none of the features of the blood picture of pernicious anemia is lacking.

Furthermore, a condition of the marrow agreeing with that found in human cases may be produced—a marrow in which there is a predominance of the megaloblastic type of nucleated red cells and of cells of the large lymphocyte type. There seems to be no doubt, therefore, that one can thus produce the picture of pernicious anemia experimentally in animals.

As to the manner in which this picture can be produced it is of interest, as it bears somewhat on the possibility of a multiplicity of causes in the production of pernicious anemia in man, that it may be produced by the injection of a number of substances—but substances which have a common characteristic and that is, that they are hemolytic for the corpuscles of the experimental animal.

I have used artificially produced hemolytic sera, but chiefly ricin and saponin. Others have used pyridin, pyrogallol and other toxins. With large doses of ricin or saponin, injected intravenously and repeated at intervals, one may produce a progressive anemia with the blood picture described to the point at which the animal establishes a tolerance to the poison. The animals react with machine-like regularity to the dose of poison, with a sharp nucleated red cell reaction and a fall in the number of red cells, with a gradual assumption by the non-nucleated red cells of the abnormalities noted.

This reaction, the blood picture and the marrow picture are entirely different from those of a secondary anemia produced in animals by hemorrhage. In these latter cases, with repeated hemorrhage and a constant fall in the red cells, there is no sharp nucleated red cell crisis; megaloblasts are not found in the circulation and normoblasts but occasionally, after the first reaction. The color-index falls rapidly, the corpuscles becoming extremely pale, and the marrow has the characteristic picture seen in cases of secondary anemia where the nucleated cells of the normoblastic type are the predominant cells. It is an entirely different picture. While this picture of pernicious anemia may be produced by several hemolytic substances it is only produced by them if they are injected into the circulation in relatively large doses, which is of importance in considering the pathogenesis of the disease.

If these hemolytic substances are injected, not intravenously but subcutaneously or intraperitoneally, the result is entirely different. The hemolysis goes on; deposits of blood pigment are found in the spleen; there is a reduction in the red cell count, but the blood picture and the marrow picture are different unless very large doses are used. The sharp nucleated red cell reaction in the circulating blood is not seen, the fall in the number of red cells is less sharp, and the marrow shows the picture of a secondary anemia with the great predominance of normoblastic cells so characteristic.

Briefly, by the injection of a large dose of hemolysin directly into the veins, one gets the primary anemia blood picture; by the injection of the same dose, or even larger doses subcutaneously, when absorption into the circulation is slow one gets the picture of a secondary anemia and a similar difference occurs in the marrow pictures.

The explanation of this difference lies, it seems to me, in the appearance of the marrow of animals dying after a recent dose of toxin. Where the toxin has been injected intravenously in sufficient doses it is not entirely saturated by red cells before it reaches the marrow and one finds as a result signs of direct injury to the marrow, in extensive necrosis of cells and in injury to the capillary endothelium resulting in minute hemorrhages. That there is hemolytic destruction of nucleated red cells is shown by naked pyknotic red cell nuclei found both in the marrow and in the circulating blood, and also larger cells in the marrow show pyknotic and fragmented nuclei. Where the injection has been subcutaneous, unless the dose of toxin has been extreme, the injury to the marrow is very slight and may even not appear.

Herein lies the explanation, I believe, of the relation of anemias of the pernicious type to those of the secondary type, due to causes other than hemorrhage. That is, in a disease like tuberculosis, in addition to the general malnutrition, there is a constant but slow absorption into the circulation of substances destructive to red blood cells. This absorption, however, is so gradual that the toxin is completely anchored by circulating red cells, causes their destruction or injury as shown by the splenic accumulation of blood pigment, but does not reach the marrow in an uncombined state. As a result the marrow escapes injury.

As far as the marrow is concerned, the lesion is the equivalent of a hemorrhage. It is uninjured and is able to repair the blood lesion in a normal way in as far as the general nutrition of the patient will permit. On the other hand, in pernicious anemia at some periods large quantities of a hemolytic poison gain entrance to the circulation, are not completely combined with circu-

1. The experiments forming the basis of this paper will be found in detail in the following references: Etiology and Pathogenesis of Pernicious Anemia, Johns Hopkins Hosp. Bull., 1905, xvi, 222; Experimental Anemia in the Rabbit, Jour. Exp. Med., 1906, viii, 625.

lating red cells and reach the marrow. There they cause destruction, not only of mature red cells, but of nucleated red cells and the function of the marrow is impaired, leading to a faulty response to the call made on it to repair the lesion—and the blood picture of pernicious anemia is the result.

It seems possible in this way to explain why in certain severe secondary anemias the picture of pernicious anemia is seen in the blood. One need only postulate that in a progressing anemia there comes a time when the pathologic process, the tuberculosis for example, also progresses more rapidly, more toxin is produced to be absorbed into the circulation, there are fewer red blood cells to neutralize it, and enough of it reaches the marrow uncombined to cause an injury to the marrow cells—and then the pernicious type of blood picture results.

Why one finds this blood picture as a result of marrow injury seems to depend largely on the anatomic grouping of the cells in the marrow. As I have emphasized in previous papers, the cells seem to be so arranged in the marrow that by the multiplication of the parent cells in the erythrogenetic and leukogenetic centers the young cells as they mature are gradually pushed toward the periphery of the group and thus the mature differentiated cells, the polymorphonuclear leucocytes or the non-nucleated erythrocytes are found on the periphery close to the marrow capillaries. These mature cells are the reserve stock from which the circulating blood is supplied to fill in deficiences caused in the normal wear and tear of the circulation, and normally the marrow cells proliferate only rapidly enough to keep this supply at par.

Let there be an unusual demand, as for leucocytes in an acute inflammation, and one finds that at first the marrow is cleared of all its mature polymorphonuclear cells, and myelocytes form practically the entire white cell count in the marrow. Mitosis and maturation of the products of division, however, soon produce an abundance, usually a superabundance, of polymorphous cells, and the demand is supplied. Occasionally, as in acute lobar pneumonia, the great demand for leucocytes may cause the marrow to react with immature white cells, myelocytes—which are often found in small percentage just before the crisis in that disease.

A similar story is that of the red cells. In a hemorrhage of moderate severity the marrow responds with its mature red cells and proliferation of nucleated cells takes place to supply the demand. Commonly the demand exceeds the supply of mature red cells and normoblasts are contributed to the circulating blood, but seldom in great numbers. Megaloblasts only extremely rarely are found in the stream.

This is the reaction in a hemorrhage or secondary anemia, and if the cause be withdrawn the blood count gradually returns to the normal as the result of this reaction of an unimpaired marrow. In man one misses a hypererythrocytosis corresponding to the leucocytosis which expresses the pathologic reaction in excess. This probably is due to the fact that serum withdrawals from the tissue keep the red cells diluted to the normal number, even though they be produced in excess. In an animal like the rabbit, with dry tissues, a reaction in excess may be obtained, with high red cell counts in the circulation, and then a gradual return to the normal.

Now in the cases with marrow injury we have an entirely different reaction, for the reason, it appears, that the toxin reaches first these mature red blood cells and the normoblasts and causes their destruction in part. In its first response the marrow throws into the circulating blood the most peripheral and most mature cells left, and these are often normoblasts and intermediates which appear in the circulation in a shower often aggregating thousands per cubic millimeter.

If the injury be more severe, intermediate nucleated red cells and even megaloblasts appear in the circulation as the other cells have been destroyed. This, however, is ruinous to the proliferative power of the marrow; cells capable of mitosis have been lost to it. As a result, with this continued demand for red cells, there is a hasty transition from megaloblast to erythrocyte—without the orderly progression, through intermediate and normoblastic stages. The resulting cell is thus larger than normal, bears more hemoglobin and possibly is an attempt at compensation—an attempt to make quickly a cell which shall be the equivalent of more than a single normal cell. The distorted forms are expression also of this faulty hematopoiesis.

The nucleated red blood cell crises or showers so widely considered as signs of regeneration on the part of the marrow can not be so considered from the results of experimental anemias. They do not occur during recovery from hemorrhage or injury, but only immediately following direct injury to the marrow by toxins, and it would appear must be interpreted as the result of that injury. The marrow deprived of its mature red cells responds with the nearest substitute it has—the immature nucleated red cells. The greater the injury to the marrow, so much less the maturity of the cells which it can offer to supply the deficiency, so after severe or repeated injury the number of megaloblasts which are found in the circulation is increased and they are in a way an index of the gravity of the lesion.

On the evidence then of experimental work and of pathologic study it seems justifiable to conclude as to the pathogenesis of pernicious anemia that it is due to the absorption into the circulation of a substance or substances of hemolytic power toward human red blood cells, and in such quantities that it produces not only destruction of circulating red blood cells, but also destruction of, and injury to, cells of the erythrogenetic groups in the bone-marrow. This results in a defective and atypical blood formation, some phases of which may be considered as an attempt at compensation, others as a sign of injury.

One may conclude further that in secondary anemias there is a loss of red blood cells or a destruction of red blood cells by toxins. In either case the marrow is unaffected except in being stimulated to respond in a normal manner with the orderly production of non-nucleated red blood cells, and that its proliferative power is not impaired. At some point in the disease, however, the amount of toxin may be so increased that the marrow becomes injured and the blood picture becomes of the pernicious anemia type.

As to the source and nature of this poison in pernicious anemia, there is little to add. In one type only, the *Bothriocephalus* infections, has it been determined. In those cases the source is the intestine, the poison a hemolytic substance derived from the worm. Such cases may recover, with a normal blood picture, after removal of the parasite.

In the great majority of cases no *Bothriocephalus* infection exists. In these one must assume another cause. There is a tendency, however, on the basis of clinical and pathologic findings, to regard the gastrointestinal

tract as the source of intoxication. From the clinical side gastrointestinal symptoms in pernicious anemia patients are frequent and often severe, the persistent diarrhea with the general weakness furnishing the reason that brings the patient to the doctor.

From a pathologic standpoint a chronic gastritis is a frequent lesion found in the patients, and Hunter has called attention to the frequency with which oral sepsis and in particular a chronic glossitis are found in these cases. He considers that the infection of the mouth extending to lower portions of the gastrointestinal tract is the cause of the disease.

There seems to me much in this theory of Hunter's, and while I can quote no large series of personal investigations of the oral cavity, I would like to record that in two recent cases of pernicious anemia in which the oral cavity was examined there were found extensive dental caries and pyorrhea alveolaris, and also at the base of the tongue a chronic inflammatory process, in one of the cases, with shallow superficial ulceration. In the other case there was no ulceration but a degeneration and numerical atrophy of the tongue muscle and a deep sclerosis with round cell infiltration and hyperplasia of the mucous glands.

In both cases there was also a chronic gastritis. There were no other lesions found to which the anemia might be attributed. I hesitate to lay much stress on the importance of this chronic glossitis, as I am unable to furnish control statistics as to the microscopic condition of the tongue in cases dying of other diseases than anemia. I have, however, failed to observe the glossitis grossly.

If the lesion be due to infection of the gastrointestinal tract the clinical history of partial or almost complete recovery of the patient with subsequent relapse, or repeated alternation of these states, would suggest that the infecting organism was one against which a lasting immunity was not obtained. It may be one which possibly leaves the patient even more susceptible—the common history in infections by the organisms of the streptococcus, pneumococcus and gonococcus groups. There is no absolute evidence that the organism does belong to that group, and yet there appears to be no evidence that it does not. As to etiology, we must still say with Addison as to the great number of cases, that it is a disease without any discoverable cause whatever.

[THE DISCUSSION ON THE PAPERS IN THE SYMPOSIUM ON ANEMIA (ARTICLES BY DRS. ASHFORD AND KING, BUNTING, CABOT, AND MELTZR) WILL APPEAR WITH THE TWO ARTICLES LAST MENTIONED.]

Certified Milk.—This term, which has been copyrighted to prevent its misuse and to limit it to products marketed under the direction and sanction of medical milk commissions, had its origin with the Medical Milk Commission of Essex County, New Jersey, which was organized in 1893 to secure a supply of milk which should always conform to a definite standard of purity. There are now 22 such commissions in the United States, chiefly in the eastern states. The original commission has just made its twenty-first report. This commission deals with only one dairyman, who employs in the production of the milk 1,000 acres of land, 515 cows and produces daily 2,900 quarts of certified milk. A new concrete stable has been constructed on the most modern plans. A bacteriologic laboratory is established. It appears from the reports that the objects of the commission are being satisfactorily attained. The report gives a very instructive view of what can be done by private medical supervision to secure the sanitary purity of an important food product.

THE PRINCIPLES OF VACCINE THERAPY.

BACTERIAL INOCULATION UNDER THE GUIDANCE OF THE OPSONIC INDEX.*

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INTRODUCTION.

I have undertaken to outline to you to-night—so far as I can do so within the limits of a single lecture—the principles of vaccine therapy; i. e., of the treatment of bacterial disease by the inoculation of the corresponding vaccines. Let me preface what I have to say on this subject by reviewing briefly the methods—other than vaccine therapy—which we have to-day at disposal for the treatment of bacterial disease. The following are, I think, the only methods which here come into consideration:

(1) Treatment by chemical antiseptics.
(2) Treatment by the extirpation of the obtrusive focus of infection.
(3) Treatment by the determination of lymph to the focus of infection.
(4) Serotherapy.
(5) Expectant treatment.

TREATMENT BY CHEMICAL ANTISEPTICS.

Antiseptics have found in medicine a threefold application. They have been administered internally with a view to checking microbial growth in the blood, or in regions which can be reached only by the channel of the blood. They have been applied locally with a view to holding in check and extinguishing localized bacterial infections. They have been used for the purpose of checking putrefaction in discharges and devitalized tissues. Neither the first nor the third of these applications calls for any discussion. For some time past it has been all but universally recognized that it is futile to attempt to check bacterial growth in the interior of the organism by our present antiseptics, which have a greater affinity for the constituent elements of the body than they have for any bacteria[1]. Again, there has never been any doubt as to the possibility of suppressing putrefactive changes by antiseptic irrigations. Attention, therefore, may be concentrated here on the issue as to whether or not the antiseptic applications are effective in holding in check and extinguishing localized bacterial infections.

It is, of course, currently believed that this method of treatment is effective. It is in this faith that the surgeon introduces antiseptics into septic wounds, or, when he happens to be so minded, into abscess cavities. It is in this faith that the physician resorts in the case of pulmonary infections to antiseptic inhalations. And it is in this faith that the dermatologist, gynecologist, laryngologist, aurist, and genitourinary specialist are strenuous in the application of antiseptics each to the particular province of the body which he takes under his special care. It will be profitable for us to collate the facts and to consider whether or not there is in reality any trustworthy basis for the belief that inspires all this practice.

Significant in this connection appears to me the fact that antiseptics are now by general consent abandoned in the treatment of ordinary surgical wounds. Signifi-

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*EDITOR'S NOTE: This represents a lecture delivered before the Harvey Society, New York, Oct. 20, 1906. The manuscript, however, was only received July 22, 1907, so it is fair to assume that it embodies the author's latest ideas on the subject.

1. We have a general formula for such antiseptics when we say in technical terms, which perhaps improve a little on those of Ehrlich, that they are more "histotropic" than "parasitotropic."

cant also is it that the practice of introducing antiseptics into abscess cavities, which was erstwhile so common, is now less and less frequently resorted to. Significant again is it that treatment by antiseptics in case of bacterial invasions of mucous membranes is to-day more and more frequently followed up by curetting, scraping, and so-called radical operations. Above all, significant is it that so distinguished a dermatologist as Sabouraud should sum up the results of antiseptic treatment of bacterial diseases of the skin as follows:

> Curious indeed is the failure of antiseptics in connection with the treatment of bacterial diseases of the skin. Quite colossal were the expectations which were entertained with regard to what would be effected by these. What antiseptics have accomplished by their agency amounts in point of fact to next to nothing.
>
> The results which have been obtained in connection with pulmonary infections by antiseptic inhalations and in connection with bacterial infections of the genitourinary passages by "urinary" and other antiseptics are, I am persuaded, neither better nor worse than those which have been obtained in connection with diseases of the skin. Now all this failure of antiseptics is, I submit, only what might have been expected *a priori*.

Let me put the case as it appears to me.

It is, of course, axiomatic that antiseptics can take effect only on those bacteria with which they come in contact. It is obvious also that in the case of bacterial infections of the skin and mucous membranes the infecting bacteria will not all be lying on the surface, and that they will not when lying on the surface be limited, with respect to their distribution, to those regions which are accessible to antiseptics. It follows, therefore, that it will be unreasonable to expect from any application of antiseptics anything in the nature of a complete sterilization. In every case there will remain a residue of surviving bacteria, and the survivors will inevitably multiply and reoccupy the disinfected surface.

And this is not all. The antiseptic will not, as the unthoughtful assume, add its antibacterial power to the antibacterial power of the living organism. On the contrary, the antiseptic will directly antagonize the protective forces which the living organism has at command, it will paralyze the phagocytes, and will abolish the antibacterial power of the blood fluids. By the action of the antiseptic the disinfected surface will thus be left swept and garnished for reoccupation by the expropriated bacteria.

And again this is not all: The antiseptic application will also injure the histologic elements and in particular the capillaries of the tissues to which it is applied. It will thus lead to an outpouring of lymph from the disinfected surface. That outpouring will not only wash away the antiseptic but when a skin surface is in question it will convert the natural dry and horny epithelial armor into a lymph sodden envelope, which will be easily penetrable by bacteria.

TREATMENT BY THE EXTIRPATION OF THE OBTRUSIVE FOCUS OF INFECTION.

In case the invading bacteria have penetrated into the interior of the body, their destruction by antiseptic applications obviously will be out of question, and the policy of proceeding against the bacteria by surgical methods will come up for consideration.

I can understand that extirpation may be imperative when an organ has been completely disorganized by invading bacteria and when there is danger to life from the spread of the infection. I can understand also that a case can be made out for extirpation when there is prospect of removing all the infecting bacteria without danger or sensible mutilation. Lastly, I can understand that it will be an added advantage if an extirpation-operation removes along with the infecting bacteria a useless organ which is specially subject to infection.

But assuredly these are not the conditions under which the majority of scraping and extirpating operations are undertaken. And in particular these are not the conditions which confront us in those extirpation operations which are employed as a routine treatment in localized tuberculous infection. Here, long before the surgeon has been called on the scene, many of the bacteria may have been carried by the agency of the blood and lymph stream, far out of reach of the knife.

It will be clear that it can not be claimed for extirpation operations undertaken in these circumstances that they are in any real sense of the term radical operations. They are operations which aim only at the extirpation of one or more obtrusive foci of infection.

In harmony with this conclusion is, the fact that tuberculous disease so often recurs after operation; exceptionally in the form of general tuberculosis, commonly, as a localized process either in the site of the operation, or in some new site. Such results would at first sight appear to be due simply to the mechanical disturbance effected by the operation in the focus of infection. But another factor probably is at work here—notably when tuberculosis recurs acutely either locally or as a general infection. A reduction in the antibacterial power of the blood may supervene on operative interference.

TREATMENT BY THE DETERMINATION OF LYMPH TO THE FOCUS OF INFECTION.

The method of extirpation by the knife is only one of the methods which can be employed for the treatment of bacterial infections when these have passed beyond the reach of antiseptic applications. Of the other methods, the more important are the application of hot fomentations, the evacuation and drainage of abscess cavities, massage, the methods of Bier and Klapp, and the various forms of radiotherapy. In all these methods—and it is this which has induced me to bring them together here under a single heading—we have as a prime factor a determination of lymph to the focus of infection, and, as a secondary factor, a conveyance into the blood of lymph which in passing through the focus of infection has been impregnated with bacterial products. Before I have done I shall explain to you in connection with the passage of blood fluids into the focus of infection, that these blood fluids will exert in every case some antibacterial effect on the invading bacteria; and in connection with the passage of bacterial products from the focus of infection into the blood that these products will invariably effect very important modifications in the blood both in reducing and in increasing its antibacterial power.

There are thus *a priori* grounds for expecting useful therapeutic effect from each and all of these methods; and such useful therapeutic effects are achieved in many cases. There are also, however, as you will already have appreciated, *a priori* grounds for expecting that there will occasionally result from the application of these methods not only failure but disaster. It is within our knowledge that failures are common in connection with all these methods of treatment and also that disaster has followed massage, the venous congestion of Bier,

and radiotherapy. It will presently become clear that disaster may be expected whenever, by the application of these methods, bacterial products are introduced into the blood in immoderate quantities.

SERUM THERAPY.

All the therapeutic methods mentioned have application only to localized bacterial invasions. Serum therapy has more ambitious aims. After a successful application in the treatment of diphtheria, this method—and this without intermediary trial in connection with simple, localized and correspondingly more tractable forms of infection—has been applied to the treatment of the most desperate and complicated varieties of bacterial infection. Serum therapy has found application not only in septicemic infections but also in pulmonary phthisis, in which there is practically always a most complicated mixed infection. In these applications serum therapy, I submit, has everywhere disappointed expectation.

It is not enough to realize the fact of failure. Wherever, as here, in the application of any therapeutic method, repeated failure is encountered, we are called on to make a critical review of the facts and to enquire into the rationale of the method which has found acceptance. In accordance with this principle we are called on to consider here whether there is any assured basis for the treatment of bacterial infections by serum therapy. That treatment is, in point of fact, built up on the postulate that the animal organism possesses the capacity of responding to the incorporation of practically unlimited quantities of bacterial cultures by a practically unlimited output of bacterial substances. Now, this assumption, while it might be thought to win support from the analogy of what occurs when diphtheria or tetanus toxin is incorporated into horses, is entirely out of accord with the results which are ordinarily obtained by the inoculation of bacterial cultures. When it is considered how different are the every day events which supervene on bacterial inoculations from that miracle of immunization which has been accomplished when as a result of injections of diphtheria toxin there has been obtained in a volume of some few cubic centimeters of horses serum sufficient antitoxin to confer antitoxic power on the whole volume of a patient's blood, one is prepared to recognize that there is justification for the assumption that there will result from the introduction of a moderate amount of serum into a patient's blood, anything in the nature of a marked increase of his antibacterial power.

EXPECTANT TREATMENT.

I now come to the expectant method of treating bacterial disease—the last of the five therapeutic methods which were enumerated at the outset of this paper.

In the expectant treatment we have a therapeutic method which is based on the adoption of a policy of non-intervention as between the invaded organism and the invading bacteria. It is agreed that by this method—which consists essentially in feeding and nursing the patient and keeping him at rest in bed—far better results are achieved in generalized bacterial infections than any that could be obtained by active medication. We need only to call to mind here the fact that under the expectant treatment from 80 to 90 per cent. of recoveries are achieved in typhoid fever.

There is also a reverse to the medal. In typhoid fever there is from 10 to 20 per cent. of fatal cases. In streptococcal septicemias and in plague—to mention only two out of the more formidable bacterial infections—there is a mortality in comparison with which the percentage of recoveries is insignificant. Further, in Malta fever there is a considerable percentage of cases in which the fever drags out almost indefinitely. This indictment of failure—of failure in septicemic diseases—is very far from being the only indictment which can be brought against the expectant method.

Comparatively speaking, generalized bacterial infections are rare and transient incidents in life. The really serious ills of life are the various localized bacterial infections which sooner or later fasten on every man, never afterward releasing their hold. It follows from this that a graver allegation is brought against a method of treating bacterial disease when it is alleged that such method has no application in localized bacterial processes than when it is pointed out, as it has been here in connection with the expectant treatment, that it is a method which disappoints in many varieties of generalized infection, and a method which commits the destiny of the patient—so far as that destiny is involved in the issue of his conflict with the invading microbes—entirely into the hands of chance.

Now the graver charge of having no application with localized bacterial diseases may be brought against the expectant method of treatment. It is only, as I apprehend the matter, in case life is threatened by the entrance of bacteria or bacterial products into the blood—and as we shall see later not even invariably in that case—that Nature seriously addresses herself to the task of immunization. So long as a bacterial invasion is still strictly localized Nature opposes to it nothing more than a passive resistance. It follows that in localized infections it is idle to wait on Nature and to expect from her any work of immunization. It would be impossible, I think, to over-rate the practical importance of this generalization. Physicians will realize the importance of this if they will take any series of cases of endometritis, middle-ear disease, chronic bronchitis, lupus, or other localized bacterial disease, and will take into consideration the number of years the infection has persisted.

I can call to mind among patients whom I have treated recently no fewer than three cases in which lupus has persisted for over forty years.

PRINCIPLES OF VACCINE THERAPY AND SKETCH OF THE MACHINERY OF IMMUNIZATION.

Having now passed in review the therapeutic methods which are in use in the treatment of bacterial disease, I propose to turn to the main theme of my discourse and to deal with the treatment of bacterial disease by vaccine therapy. The essential feature of this method is the scientific exploitation for therapeutic uses of the protective machinery with which the organism is equipped.

Two elements come into consideration in the protection of the organism against invading micro-organisms: The leucocytes with their digestive ferments constitute one of these elements; the antibacterial substances in the blood fluids constitute the other.

A word or two will be appropriate in connection with each of these elements of our protective machinery.

(a) *Leucocytes.*—The leucocytes come into consideration in connection with resistance to bacterial infection by virtue of the fact that they are capable of ingesting bacteria and of disintegrating these by intracellular digestion. We may usefully distinguish be-

tween "spontaneous" and "induced" phagocytosis. By the former of these terms we may denote that process of ingestion which comes under observation when bacteria which have not been subjected to the action of the blood fluids are brought in contact with washed leucocytes in an indifferent medium such as physiologic salt solution. "Spontaneous" phagocytosis as here defined is distinguished by the facts that it is a comparatively slow process; that the number of bacteria ingested by each leucocyte attains ordinarily only very modest proportions, and that the ingestion is irregular in the sense that individual polynuclear leucocytes differ very strikingly from their congeners with respect to their intake of bacteria—the majority of leucocytes pick up from such a bacterial suspension as is ordinarily employed, very few if any bacteria, while others ingest relatively considerable numbers—and lastly, by the fact that the ingestion of bacteria can be completely suppressed by employing in the phagocytic mixture a concentration of slightly over 1 per cent. of sodium chlorid. Strikingly different from such spontaneous phagocytosis is the "induced" phagocytosis which comes under observation when leucocytes are brought in contact with bacteria which have been or actually are at the moment subjected to the action of serum. The induced phagocytosis which occurs in these conditions is distinguished by the following facts: First, it is an exceedingly rapid process; second, with hardly an exception, every adult leucocyte is here phagocytic (instead of some few leucocytes taking part immoderately while the others abstain); third, when the supply of micro-organisms is unrestricted the leucocytes ordinarily will fill themselves to absolute repletion, and, fourth, the leucocytes will continue to ingest bacteria in a concentration of salt which entirely suppresses "spontaneous" phagocytosis.

Seeing that phagocytosis of bacteria without subsequent intracellular digestion would be meaningless from the point of view of the protection of the organism, it will be plain to you that the digestive powers of the leucocytes would here come up for consideration. For the present, however, I am debarred from entering into such a discussion, not having yet qualified myself to speak at first hand on the matter. Permit me none the less to give here my tribute of admiration to the brilliant initiating work which has been done on this subject by your fellow member, Dr. Opie.[2]

2. Since the date of this lecture I have confirmed the results of Opie and have found a method of displaying his results by the aid of leucocytes obtained from blood drawn from the finger. It may be of interest, perhaps, to subjoin here the technic I have employed. As you will have recognized, it is modeled on the inoscopic methods of Joussett. A capillary pipette which is fitted with a rubber teat is taken in hand. A puncture is made in the finger, and one volume of blood—a quantity of from 10 to 20 cm. is adequate for the purposes—is aspirated into the stem of the pipette. Filling up each time to the same mark, four equal volumes of distilled water are aspirated into the pipette and these four volumes of water are mixed with the one volume of blood in the neck of the pipette. By this maneuver we hemolyze all the red corpuscles, leaving the white corpuscles intact. The pipette is then placed in an incubator at blood heat and kept there for ten or more minutes. The diluted blood will now have coagulated in the neck of the pipette. The next step is to fill another pipette with physiologic salt solution and to project this in the form of a stream on the coagulated blood. This process is continued till the clot has contracted firmly on the white corpuscles which are held in suspension in its meshes, and until every trace of serum is washed away. The last traces of our wash water are then removed and in its place a quantity of liquefied 15 per cent. gelatin equivalent to twice the original volume of blood is poured into the pipette. Finally the tube is sealed up in an airtight manner and placed in an incubator regulated so as to maintain a temperature of about 50° C. After an interval of from twenty-four to forty-eight hours it is found that the clot has undergone autodigestion and that the gelatin surrounding the clot has lost its power of solidifying on cooling. The fact that these changes do not occur in the presence of serum is demonstrated by a control tube which has been treated in exactly the same manner except that it has received a small addition of serum.

(b) *Antibacterial Elements of the Blood Fluids.*—The blood fluids differ essentially from the nutrient fluids which are ordinarily employed by the bacteriologist for the cultivation of micro-organisms in the respect that while the latter are nutrient fluids pure and simple, the blood fluids, in addition to nutrient constituents, contain antibacterial elements. The antibacterial elements which are here in question are of "bacteriotropic" elements in the sense that they turn toward and enter into combination with elements of the bacterial body. Our knowledge of the modifications which are effected in the bacterial body under the influence of the bacteriotropic substances in the blood fluids is extremely incomplete. It is known, however, that the effect of the blood fluids on the bacterial body may manifest itself in various ways: The bacteria may be killed without being dissolved. The bacteria may not only be killed but dissolved. We may group these together as bactericidal and bacteriolytic effects. The bacteria may be so altered as to agglutinate in the presence of salt (agglutination effect). The bacteria may be so altered as to be readily ingested by phagocytes (opsonic[3] effect). Inasmuch as the blood fluids produce in bacteria the different chemico-physical effects here enumerated, and inasmuch as agglutinating and opsonic effects can be obtained independently of each other and independently of any bactericidal and bacteriolytic effects, we may assume that we have in the blood fluids, in addition to bactericidal substances (or bactericidins) and bacteriolysins, also agglutinins and opsonins.

Of these four varieties of bacteriotropic substances the opsonins appear to be the most important. We may ascribe to them a predominating importance, first, because it can be shown that the opsonic effect is exerted by either the normal or immune blood on every species of bacteria, whereas the agglutinating effect is exerted only on special varieties of bacteria, and the bactericidal and bacteriolytic effects are exerted among pathogenic micro-organisms apparently only on the typhoid bacillus and the cholera vibrio. The opsonins derive further practical importance from the fact that they can be accurately measured (the error of estimation in the case of normal bloods and in the hands of a good worker being rarely greater than plus or minus 5 per cent.) and that it is possible, seeing that the opsonic effect of the normal blood fluids is very marked, to register not only (as in the case of the agglutinating power) an increase but also a reduction in the opsonic power of the blood. Such increase and reduction in the opsonic power is, of course, measured by comparing the amount of purely induced phagocytosis which is obtained with a normal blood with the amount of purely induced phagocytosis which is obtained with the blood of the patient under examination.

HOW FAR IS THE PARTICULAR COMPOSITION OF VACCINE A MATERIAL ELEMENT IN THE SUCCESS OF AN INOCULATION PROCESS?

From the consideration of the protective machinery of the organism let me now turn to the consideration of certain preliminary points in connection with the bacterial vaccines which operate on that machinery. The first question which confronts us here is the question as to how far the success of an inoculation process is dependent on the particular composition of the vaccine. I have in view here in speaking of the particular com-

3. Derived from the Greek *οψωνεω* I convert into palatable pabulum.

position of the vaccine not the axiomatic requirement that it must be affiliated to, or connected by affinity with, the microbes which it is designed to combat, but rather the minute details with regard to its source and manufacture.

Reflection will make clear that the success of an immunization process must depend, in the first place, on the power of immunizing response which the organism may happen to possess with respect to the particular bacterial infection or intoxication process which is in question, and, in the second place. on (a) the composition of the vaccine and (b) the dosage and method of administration.

Up to the present the composition of the vaccine has been considered to the practical exclusion of the question of dosage. Whenever ill success has attended a process of immunization, or whenever it has appeared to any one that it ought to be possible to improve on the result already obtained straightway the suggestion has been put forward that some change ought to be made in the composition of the vaccine. In such cases living vaccines have been proposed as substitutes for sterilized vaccines; vaccines derived from virulent cultures as substitutes for vaccines derived from avirulent cultures; vaccines derived from cultures more closely affiliated to the microbes against which protection is sought as substitutes for vaccines obtained from cultures less closely affiliated; vaccines derived from agar cultures for vaccines obtained from broth cultures; and vaccines obtained by the triturition of bacteria by autolysis, or treatment by caustic alkalies and subsequent precipitation with acids as substitutes for vaccines which have been sterilized in the ordinary way by heat.

It has been claimed in connection with each of the modifications here in question that its employment is dictated both by weighty *a priori* considerations and analogies and by actual experiments. Of the *a priori* considerations and analogies which have been adduced I will consider only the contention that living vaccines ought to be preferred to vaccines which have been sterilized by heat on the ground that inoculations with the former furnish close analogies with actual infections which are known to confer immunity, whereas there are no such close analogies between these last and inoculations with vaccines which have been subjected to the action of heat. To this I could rejoin that even supposing the temperature of boiling water, which the objector has in view, to produce in a bacterial culture chemical changes as fundamental as those produced by that temperature. In egg albumin, a temperature which just suffices for sterilization, might well leave the chemical constitution to a bacterial culture for all practical purposes unaltered, just as there is a temperature short of the coagulating temperature which when applied to a hen's egg will prevent germination, while leaving the chemical characters of its albuminous substances substantially unaltered.

If I refrain from all attempt to meet analogical reasonings of this kind the many other suggestions which have been put forward in connection with the constitution of bacterial vaccines, it is because I hold that in scientific controversy the proper procedure is always to either bring to light proof of a contested proposition, or to make *tabula rasa* by demonstrating that such proof is not forthcoming.

Now analogical reasonings can not supply definite proof, nor can they—seeing that no argument from analogy can ever be effectively discredited by the production of any conflicting analogy—restore to us that *tabula rasa,* which is ever, next after assured knowledge, our best intellectual possession.

Often our returns are profitable when we proceed by the pathway of reasoning from experiment. By this path we arrive always at some intellectual good. When we find a contested conclusion to rest on a firm basis of experiment we are entitled to incorporate it in a definitive manner into our sum of knowledge. When we find a flaw in the chain of reasoning we are entitled to reject and to put far from us the conclusion, recovering for future exploitation unencumbered foundations.

Allow me, in view of these general considerations, to turn to the experimental evidence, and let me try to show that the reasoning which has been held to establish that a vaccine of a particular composition is more effective than vaccine of somewhat other composition has been inconclusive in every case. Let us begin by realizing that when an animal which has been inoculated with a particular vaccine succumbs to a test inoculation this result does not establish the conclusion that the vaccine which was employed is ineffective. It demonstrates only: that the vaccine was ineffective, or that the dosage was ill chosen; that the test inoculation was ill-timed; that the test inoculation was excessive, or that two or more of these factors were at fault.

A fortiori when comparative experiments are undertaken on two animals or on two different sets of animals with different vaccines, and when one of these survives while the other succumbs to the test inoculation all that has been established is that the one vaccine employed in a particular dose x has, at the date of the test inoculation, conferred a greater measure of protection then another vaccine employed in another dose y. Now it is obvious that unless we have assurance that the doses x and y which have been employed in the comparative experiments represent the optimum doses of these vaccines (or doses which stand in each case in the same relation to those optimum doses) we can have no assurance that the survival or nonsurvival of animals is determined by the difference in the vaccine and not by a difference in the dose. Nor no serious attempt has ever been made to employ in comparative experiments exactly equivalent doses of the competing vaccines. Therefore, in the course of our study of the question as to how far the particular composition of the vaccine is material to the success of an inoculation process, there has come to light the fact that we are not yet in a position to affirm that one variety of vaccine possesses an advantage over another from the point of view of its power of conferring immunity. It has also become clear that no progress can be made in the resolution of the ulterior question which has been considered until we have settled the preliminary question as to how the equivalent doses of two vaccines can be arrived at, and how the immunizing efficacy of a bacterial inoculation can be most effectively tested. So material is a comprehension of this last question to the understanding of the principles of vaccine therapy that I need not make any apology for embarking on its consideration.

WHAT IS THE BEST METHOD OF MEASURING THE IMMUNIZING EFFECT PRODUCED BY THE INOCULATION OF A BACTERIAL VACCINE?

The method of test inoculation, i. e., the method of inoculating a living culture into an animal which has been previously treated with a vaccine and of comparing the result obtained in this animal with the result ob-

tained on a control animal inoculated with a similar test dose of living culture, has hitherto been accepted as a perfectly satisfactory method of gauging the immunizing effect of a vaccine. While it is undeniable that when the vaccinated animal survives and the control animal succumbs this method supplies a satisfactory proof of the immunizing power of the vaccine. In case the vaccinated animal succumbs it may deceive us in deepest consequence. When the test inoculation has been undertaken with an excessive amount of the living culture we may fail to obtain evidence of achievement of a sensible measure of protection. Again, when the test inoculation follows hard on the inoculation of the vaccine the animal may—and we shall presently see the explanation of this—succumb as rapidly as even before the control animal, without any fault being attributable to the vaccine. In fact the more rapid death of the vaccinated animal after a premature test inoculation, paradoxical as this may at first sight appear, in reality may be indicative of the excellence instead of the inefficacy of the vaccine.

If these things are so, it is clear that there may well be a more excellent method of gauging the immunizing effect of a vaccine than that which is furnished by judging by the event of a test inoculation. Reflection will show that if we can take it as assured—and I submit that we can—that the machinery of immunization is understood, at any rate in its broad features, and if it is indubitable—as in point of fact it is—that the phagocytic reaction of the leucocytes and the content of the blood in antibacterial substances can be measured with a degree of accuracy which is sufficient for all practical purposes. And if by means of these quantitative methods it is feasible to construct curves showing the march of events and the changes which are associated with the inoculation of a bacterial vaccine, it must be possible by the aid of such curves to gauge in a more accurate manner than by any test inoculation the immunizing effect of a vaccine, and to determine in the case of any two vaccines what are the doses which produce precisely equivalent effects. The method of vaccine therapy which is here in question proceeds on these assumptions. It postulates that we have in the curves which set forth changes in the bacteriotropic power of a patient's blood, and in particular in the curves which set forth changes in the opsonic index of his blood a record of blood changes which in every case exert a dominating influence on that patient's bacterial infection. I am very sensible of the fact that justification for these generalizations can be afforded only by the gradual accumulation of evidence. Allow me, however, pending the time when such evidence shall have accumulated in your hands, to forestall events and to endeavor to call up by the aid of an immunization chart a picture of the facts which were elicited by my fellow worker, Capt. S. R. Douglas, and myself in a case of localized staphylococcus infection which was successfully treated by the inoculation of staphylococcus vaccine.

INCREASED PHAGOCYTIC RESPONSE AND SUCCESSFUL IMMUNIZATION.

Increased phagocytic response is associated with successful immunization, and this increased phagocytic response is dependent on an increase in the opsonic power of the blood fluids and not on an increased capacity for spontaneous phagocytosis on the part of the white corpuscles.

The immunization chart (Fig. 1*) furnishes a typical illustration of the achievement of increased phagocytic response in association with successful immunization. The phagocytic power of this patient's blood, when he came under treatment for an aggravated localized staphylococcus infection, was equivalent, as shown in the chart, to less than half that of a normal man. By the agency of successive inoculations of a staphylococcus vaccine his power of a phagocytic response was augmented till it was equivalent to nearly three times that of a normal man.

At the point which is indicated by an x on the chart —and the clinical condition of the patient had by this time improved in a marvelous manner—an investigation was set on foot with a view to determining whether the increased phagocytic response which had been achieved was referable to an increased power of spontaneous phagocytosis on the part of the white corpuscles or to an increased opsonic power in the blood fluids.

In order to decide between these two alternates a duplicate series of tests was instituted. In the experiments of Series 1 washed corpuscles prepared from the patient were tested (a) in association with his own serum and (b) in association with the serum of the normal man who served as a control. In the experiments of Series 2 the washed blood corpuscles of the normal man who served as a control were tested (a) in association with the immunized patient's serum and (b) in association with his own serum. In each case the technic was that which I have elsewhere described, the same amount of the same staphylococcus suspension being in each case introduced into the mixture of corpuscles and serum. The phagocytic counts which were obtained under these circumstances were as follows:

The phagocytic counts (i. e., average number of microbes ingested by each P.W.B.C.) which were obtained under these circumstances were as follows:

Series 1:—

(*a*) Washed corpuscles of immunized patient employed in association with the serum of the immunized patient, 25.7.

(*b*) Washed corpuscles of immunized patient employed in association with serum of the normal man who served as control, 13.

Series 2:—

(*a*) Washed corpuscles of normal man who served as control employed in association with serum of immunized patient, 28.2.

(*b*) Washed corpuscles of normal man who served as control employed in association with the serum of the normal man, 13.

What now do we learn from these phagocytic counts? We learn from a comparison of the phagocytic counts in experiments (a) and (b) in Series 1 that the serum is a factor which profoundly influences phagocytosis. It does not emerge from a comparison of the two phagocytic counts, Series 1 (a) and (b)—inasmuch as here in each case the same variety of leucocytes was employed—whether or not the phagocytic count is influenced by the variety of leucocytes. A comparison of the phagocytic counts (a) and (b) of Series 2 once more shows that phagocytosis is influenced by the variety of serum. And again—for the same reason as before—a comparison of these two phagocytic counts leaves it undecided as to whether or not phagocytosis is influenced by the variety of leucocytes which is employed.

From consideration of the all but complete identity

*EDITOR'S NOTE: Chart 1 was not received. A duplicate has been sent for and will be published on its arrival.

of the phagocytic counts obtained in Series 2 (a) with the count obtained in Series 1 (a) and again from the identity of the phagocytic count obtained in Series 1 (b) and Series 2 (b) it seems clear that the phagocytic count is uninfluenced by the variety of corpuscles employed. In short, the whole experiment teaches us that the changes which are associated with the acquirement of immunity are changes in the blood fluids and not changes in the white corpuscles. This conclusion, in addition to its theoretical interest, has also, be it remarked, an absolutely fundamental practical importance. It will make it clear that we may take the opsonic index of any blood as an index of the patient's power of phagocytic response.

DETAILED STUDY OF THE CURVES OF IMMUNIZATION OBTAINED BY THE INOCULATION OF BACTERIAL VACCINES.

We have next to make a detailed study of the curves of immunization which are obtained by the inoculation of bacterial vaccines and to make acquaintance with the laws which govern the output into the blood of the opsonins and other bacteriotropic substances which are produced in the organism in response to an *ictus immunisatorius*.

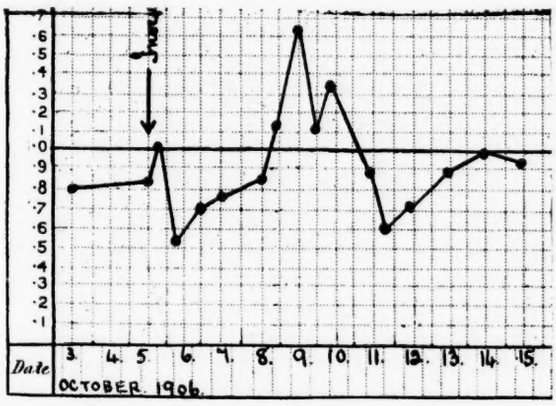

Fig. 2.—Chart of opsonic index. The inoculation at the point marked "inoc." was of 1/2,000 milligram T. R.

Such a record as is furnished by the immunization chart reproduced in Figure 1 gives an inadequate and, be it noted, a fallaciously inadequate account of the events which occur in the blood after the inoculation of bacterial vaccines. When, instead of testing the blood after inoculation at intervals of from seven to ten days, as was done in the case of the patient whose immunization chart has just been considered, the blood is tested from day to day, it is borne in on us that the augmentation of the bacteriotropic power—or, let us rather phrase it, the rise in the bacteriotropic pressure—of the blood is generally preceded by a fall. It is impressed on us also that the rise which is achieved by inoculation is only a transient rise, and that the bacteriotropic pressure generally declines after the interval of a few days, sinking away until it reaches the point at which it started; in other cases, it runs along for a time at a level only a little above the original base line. I have spoken of the sinking away of the bacteriotropic pressure of the "negative phase" and of the rise of pressure as the "positive phase" of the reaction of immunity. And I have tried to delineate in words the whole oscillation by speaking of "the ebb" (*the negative phase*), "the flow" (*positive phase*), "the backflow" (subsequent decline of the curve) and "the sustained high tide of immunity."

This phase describes only the larger features of the curve. When more frequent, and in particular when earlier blood examinations are made another practically constant feature reveals itself. This is the transient initial rise preceding the negative phase. We may think of this as of an anacrotic wavelet which arrives before the main wave of immunity. This wavelet and its position in the general scheme of oscillation is shown in Figure 2.

It is not to be assumed that the form of curve as set forth in the chart (Fig. 2) is universally conformed to. When a dose of vaccine which is only just sufficient to produce a result is administered the negative phase is elided and there is registered only a positive phase. The curve in such a case neither rises so high nor does it maintain itself so long above the base line as when a larger amount of vaccine has been administered.

When an excessive dose of vaccine is administered—meaning here by an excessive dose a dose whose inoculation produces severe constitutional symptoms—the negative phase is proportionately accentuated and prolonged. The bacteriotropic blood pressure may be reduced for a period of weeks, and the advent of a positive phase in such a case may be awaited in vain.[4]

CHRONOLOGY OF THE DIFFERENT PHASES OF THE CURVE OF IMMUNIZATION.

Having now learned the features of the curves which are obtained after the inoculation of different quantities of bacterial vaccines, we may further study the chronology of the successive incidents. The traditional view—a view which would seem to have been derived from experience with vaccinia—is that a period of ten days is always required for the establishment of active immunity. Largely owing to the fact that this view was adopted by Pasteur it became part of the routine religion of the bacteriologist—animals and men being subjected to test inoculations or to reinoculation on the expiration of a fixed period of ten days. So far as I know, Haffkine was the first to claim that a condition of immunity was achieved within twenty-four hours after the inoculation of a vaccine. He put forward this claim in connection with his plague vaccine, basing his contention on the statistical results of antiplague inoculations undertaken in India in the Byculla gaol and in the village of Undhera. Some years afterward—the matter having in the meantime been advanced a step further by the publication, under Haffkine's auspices, of evidence pointing to the successful inoculation of patients who were already in the incubation period of plague—I obtained in the course of a study of the changes effected by antityphoid inoculation in the bactericidal power of the blood evidence of development of increased bactericidal power in the blood on the day

4. It may be interesting in this connection to note the following points: (1) Immoderate negative phases due to overdosage rarely come under observation except in the case of patients who are new to inoculations. After a prolonged series of inoculations it is the rule, but by no means an invariable one, to find that a large surplus of vaccine over that which is required to raise the bacteriotropic pressure of the blood can be tolerated. (2) When by inadvertence an excessive dose of vaccine has been administered it is unnecessary definitely to await the return of the bacteriotropic pressure to the normal. In such a case, the desired rise can practically always be obtained by reinoculating as soon as all constitutional symptoms have disappeared with a minimal dose of vaccine. (3) The forerunner initial rise spoken of above may come into observation also in connection with the inoculation of an immoderate dose of vaccine. It may perhaps be provisionally assumed that such initial rise is the response of the organism to the fraction of the total dose which is immediately absorbed.

subsequent to the inoculation of moderate doses of antityphoid vaccine. Following on that, I obtained in connection with my first therapeutic inoculations of staphylococcus vaccine evidence of increased phagocytic response on the day subsequent to inoculation. One would have thought that this would have constituted a record. During the last twelve months, however, we have obtained in numerous cases conclusive evidence of an augmentation of the opsonic power of the blood within an hour after the inoculation of tubercle vaccine, and also trustworthy witness of associated clinical improvement within that time in case of inoculation of tubercle vaccine in an infection of the eye. In the treatment of furunculosis by inoculations of staphylococcus vaccine we have also obtained trustworthy evidence of clinical improvement within an hour after inoculation. The augmentation of the opsonic power and the clinical improvement which are here in question were correlated—in the case in which very small doses of vaccine were employed—with the development of the ordinary positive phase, and—in the case in which moderate doses of vaccine were employed—with the development of that feature in the curve which was referred to above under the designation of the initial rise.

WOULD IT NOT BE POSSIBLE BY PILING ONE INOCULATION ON ANOTHER TO ACHIEVE A LARGER OUTPUT OF ANTIBACTERIAL SUBSTANCES AND IN ASSOCIATION WITH THIS A POSITIVE PHASE OF LONGER DURATION?

It will be every man's—at any rate every beginner's—thought that it ought to be practicable to achieve a larger output of antibacterial substances—if not by the employment of larger doses of vaccine, then assuredly by piling up inoculation on inoculation.

I have already discussed this question elsewhere,[5] and have pointed out that while it may be possible when submaximal doses—using the term submaximal doses here to denote doses smaller than those which would give maximal immunizing response—are employed to obtain cumulation in the direction of the positive phase such a result with other vaccines—and in particular with the tubercle vaccine—can very rarely if ever be obtained. When this situation confronts us the proper policy would appear to be to treat each inoculation as an independent event—following up one inoculation by another as soon as the effect of the antecedent one is passing off.

IS IT EXPEDIENT TO EMPLOY IN SUCCESSIVE INOCULATIONS PROGRESSIVELY INCREASING DOSES OF VACCINE?

Close kin to those primitive ideas which suggest that the immunizing response must increase proportionately with the dose of vaccine employed, and that, failing this, it must be possible to obtain an increased immunizing response by piling one inoculation on the other, is the idea that it must be possible to achieve a greater yield of protective substances by employing in successive inoculations progressively increasing doses of vaccine. In point of fact, experiment shows clearly, not alone that no advantage is reaped from a progressive augmentation or the doses of vaccine, but that such a course must inevitably lead on to disaster. Indeed, it is obvious on *a priori* considerations alone that when the dose of vaccine is progressively augmented a point must sooner or later be reached at which the immunizing power of response will give out. I would, therefore, put it to you that the proper principle of dosage in any series of inoculations is never to advance to a larger dose until it has been ascertained that the dose which is being employed is too small to evoke an adequate immunizing response. A dose of vaccine may be adjudged too small as soon as it has been ascertained that its inoculation is not followed by a negative phase and that the positive phase is not well marked and is only of very short duration.

THE SITE WHICH OUGHT TO BE SELECTED FOR THE INOCULATION OF A BACTERIAL VACCINE.

A whole array of observations point to the local production of bacteriotropic and vaccinotropic substances generally at the site of inoculation. In the first place we have the observation that an infinitely greater yield of antitoxins—and it would seem also of antibacterial substances generally—is achieved in horses by the subcutaneous as contrasted with the intravascular method of inoculation. We have further the observation that in antityphoid inoculation a more effective protective reaction is induced in patients who show considerable local reaction at the seat of inoculation than in those who suffer from severe constitutional symptoms apart from any appreciable local reaction. It has also been noted that local immunity may be acquired and retained apart from the acquirement or retention of general immunity. If we may build—as it would seem that we may—on the aggregate of these observations it would logically follow that the site of every inoculation which is undertaken for the therapeutic purposes deserves to be carefully considered in connection with the site of the focus of infection which is to be influenced. It will not suffice to inoculate into any region of the subcutaneous tissue which may happen to present itself as convenient. It is true that for aught we know to the contrary one and the same amount of protective substances would be elaborated in each case. A difference could, however, occur in this way. When protective substances find access to the blood by a channel which does not lead through the focus of infection—let us for the purpose of fixing our ideas suppose that focus to be situated in a lymphatic gland—the newly elaborated protective substances will come into operation on that focus only after they have been diluted by the whole volume of the blood. When on the contrary—if I may so express it—the inoculation has been made "up stream" from the focus of infection, i. e., in some part of the lymph watershed which drains through the focus of infection, the protective substances which are produced at the site of inoculation may be expected to come into application on the focus of infection in a comparatively undiluted condition.

Pending the time when the place of origin of the bacteriotropic substances which appear in the blood after inoculation shall have been definitely set at rest by some *experimentum crucis,* I have made some tentative therapeutic experiments on the relative efficiency of inoculations undertaken up stream from the focus of infection as compared with inoculations made in regions which were not so related to that focus. I feel satisfied that those experiments—though they at the same time indicate that one and the same portion of tissues tires out on too frequent inoculations—have furnished results conformable to those which might have been expected to follow from the theory of the production of bacteriotropic substances at the site of inoculation. To make only one case out of many, I was much impressed by the

5. Clinical Journal, May 16, 1906; Transactions of the Royal Medico-Chirurgical Society, vol. lxxxix.

fact that the theory of the local production of protective substances[6] suggested a procedure which successfully arrested the spread of a tubercular process after all other methods had failed. This result was obtained in the case of an ulcer which, though it had completely healed in the middle, was spreading outward in the form of a ring of indurated tissue. Its arrest and definite cure was achieved when, executing a strategic move, I inoculated in a series of different positions disposed circle-wise around the extending ring.

ACQUAINTANCE WITH THE PHYSIOLOGY OF THE IMMUNIZING RESPONSE NOT A SUFFICIENT EQUIPMENT FOR AN IMMUNIZATOR.

Up to this point we have been dealing with the physiology of immunization and the nature of the immunizing response. For the successful treatment of bacterial disease by methods of immunization something more is required. We must realize the conditions under which bacteria cultivate themselves in the organism. We must understand under what circumstances bacterial products, or bacteria, as the case may be, are conveyed into the blood stream from local foci of infection. We must appreciate how the organism reacts to such autoinoculations; and we must understand how to bring the leucocytes and bacteriotropic substances which are the instruments of immunization into operation on bacteria which are cultivating themselves inside the organism but outside the blood stream.

(To be continued.)

THE MANAGEMENT OF DISLOCATION AT THE SHOULDER JOINT COMPLICATED BY FRACTURE OF THE NECK OF THE HUMERUS.*

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The occurrence of four cases of the above injury in my own work within seven months suggested a study of the condition and will serve as the reason for choosing this subject. Even from so limited an experience one is prepared to say at the outset that fracture-dislocation at the shoulder happens more frequently than is usually supposed; that its recognition is not always an easy matter, and that its proper treatment is little understood. There are several causes for this state of affairs. Chief among these is the fact that text-books on surgery do not consider the matter in detail and teachers of surgery do not lay stress on it.

In a list of ten authors consulted, one does not mention the subject, seven deal with it in a short paragraph, while only two treat it with anything like adequate importance. Practitioners must, therefore, find difficulty and uncertainty in approaching such cases. Moreover, much carelessness is manifested in examining shoulder-joint injuries, the physician often being content with superficial manipulations and the application of a sling or a bandage. It must be admitted that a simple dislocation of the shoulder-joint is readily seen and remedied, but when displacement is associated with fracture of the humeral neck the diagnosis and management are questions not easily determined. For the purpose of this paper its title has been made to include fractures both of the anatomic and surgical neck of the humerus, and these will be discussed together.

The four cases occurring in my own practice are as follows:

CASE 1. *Old Unreduced Dislocation, with Fracture of the Surgical Neck, United in Abnormal Position. History.*—Mrs. L. H. M., aged 52, was first seen Jan. 5, 1905. About nine weeks previously (Oct. 20, 1904)) she was thrown from a carriage, striking on her left shoulder. A physician saw her soon after and recognized the nature of the injury, but failing in an attempt to reduce the dislocation, he directed his attention to the fractured humerus in order to obtain union of the bone and later to effect restoration of the joint.

Examination.—When the patient came for examination, it was seen that the left shoulder drooped, the muscles were atrophied, the arm exhibited only slight anterior and posterior movements, and the head of the humerus was immovably fixed in its new position (subcoracoid). There was apparently firm union of the fracture at the surgical neck.

Treatment.—Under anesthesia an attempt was first made to reduce the dislocation by Kocher's method. As soon as the arm was rotated outward the bone snapped and the original fracture was reproduced. An oblique incision was then made over the misplaced humeral head through the fibers of the pectoral muscles, with the intention of lifting the upper fragment out and restoring both the joint and the continuity of the bone. This was found to be impossible and the only recourse was to obtain a false joint at the line of fracture. The incision was closed with drainage and the arm was placed in a sling, after bringing the shaft of the bone as nearly as possible at a right angle to the upper fragment, and as far away from it as permissible. The woman remained under treatment for about ten days and left with instructions for massage and passive motion. The result in this case has been far from satisfactory. In spite of every effort to prevent it, the fragments reunited, so that the effect of the operation is *nil*.. The woman can get her hand to her mouth and the arm is of considerable service to her, but all the motions are restricted.

CASE 2. *Unreduced Dislocation Showing an Undiscovered Fracture of the Anatomic Neck. History.*—C. P., aged 20, while playing ball at school April 25, 1905, fell on his left shoulder. He was not seen by a physician until five hours had elapsed and during this interval his schoolmates pulled long and hard at the joint in their endeavors to "put it in place." The doctor who first attended the young man said that he reduced the dislocation and some degree of restitution was evidently obtained, for there was no pain or discomfort for a week. After that time, however, he began to suffer and applied to a neighboring physician for relief. It was then found that the dislocation had recurred and the patient was sent to Rex Hospital for treatment, nearly two months after the injury.

Examination.—On June 19, 1905, an examination disclosed a longstanding subcoracoid luxation of the left shoulder-joint without marked muscular atrophy; the head of the humerus seemed unusually large and irregular in shape.

Treatment.—Remembering the experience in the first instance (Case 1), little time was lost in manipulation, but, instead, the open method was immediately resorted to. In this case a straight incision was used, going directly downward from the acromion through the deltoid muscle to the extent of four inches. With the aid of forceps and fingers the humeral head was restored to the glenoid cavity without opening the joint. Close inspection revealed a line of callus-formation, and deformity, indicating a healed fracture through the anatomic neck of the humerus—the cause of failure in retaining the arm after apparent reduction. The wound was closed after inserting a small drain. A shoulder cap of plaster-of-Paris was molded to the joint and secured by roller bandages. In one week's time this was removed and passive movement begun. The outcome of the case was most gratifying.

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6. In this connection I would throw out as a suggestion that the production of protective substances at the site of inoculation would be definitely set at rest if after the inoculation of a bacterial vaccine into a limb it were shown that an increase of protective substances in the blood could be achieved by either massage and the application of a Bier's bandage.

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

Before a month had passed the boy had almost perfect use of his left arm and now (nearly two years after) it would be hard to believe that the shoulder had ever been dislocated.

CASE 3. *Old Dislocation of the Shoulder, Complicating a Comminuted Fracture of the Upper Extremity of the Humerus. History.*—H. M. R., aged 48, locomotive engineer, stepped from his cab in the darkness, missed his footing and fell down an embankment, striking on his left shoulder. This happened June 4, 1905. He was seen at the time by a physician who told him that his injury was not serious and placed the arm in a sling. It was not until July 16, 1905, a month and a half after the accident, that the patient came, through consultation, under my care. During the interval he had received massage, electricity, hot water and passive motion. A skiagraph had also been made, which gave the impression of a fracture of the scapular neck. It was confusing rather than enlightening. Afterward it was shown that the shadow of an outlying piece of the head of the humerus had produced the conception of a broken scapula.

Examination.—On examination the region of the joint was found to be swollen so that it was impossible to make out anything definite. The movements were greatly restricted and the gentlest manipulations gave intense pain.

Treatment.—The operation of arthrotomy was performed July 19, 1905. By a five inch vertical incision from the acromion downward, the joint was opened through the torn capsule and there was revealed a comminuted fracture of the whole upper extremity of the humerus. Six separate fragments were found. The largest, which constituted the major portion of the articular surface, was firmly located under the coracoid process, while the rest were more or less in their proper relations to the shaft of the bone. The lines of fracture extended through and beyond the surgical neck to a distance of four inches from the upper end of the humerus. The bone tissue was soft and pulpy, while the pieces were embedded in firm adhesions. The plan pursued was to remove all the loose bone and to pack the cavity with gauze, after closing the ends of the incision, since it was out of the question to bring the upper end of the shaft into contact with the glenoid cavity. The object was to form a flail-joint and the end has justified the means. At this writing (May 14, 1907), nearly two years after the operation, the patient can use the arm for all ordinary purposes and with the assistance of the other hand can put the arm in every position except wide abduction. He says that it is much better than it was a year ago.

CASE 4. *Recent Dislocation of the Shoulder Associated With Fracture of the Surgical Neck of the Humerus. History.*—M. P., a farmer aged 60, July 25, 1905, fell from a wagon piled up with wood, into a ditch 12 feet below. He was picked up and given all necessary first aid.

Examination.—Four hours later, when seen in consultation, it was readily found that, besides a compound fracture of the right femur, the man had sustained a subcoracoid dislocation of the left humerus, with a fracture of its surgical neck.

Treatment.—Under anesthesia in his physician's office a fruitless attempt was first made to reduce the dislocation; the anterior incision was then made from the acromion downward, the head of the bone exposed and replaced without the slightest difficulty. No wiring or suturing of the bone ends was needed, as they came into absolute apposition. The incision was closed without drainage, a large triangular pad placed in the axilla and a plaster of Paris shoulder-cap put on. Both the immediate and remote results here were well-nigh perfect. At the present time the patient has as good use of his arm and shoulder as he ever had.

These cases have furnished valuable lessons. Their order of appearance had much to do with suggesting conclusions which are the natural outcome of this experience. It will be observed that, first, there came a case in which the patient was treated according to one of the formerly-authorized modes of procedure, viz., allowing the bones to unite in their abnormal position with a view to reducing the dislocation later, and that the final result was practically a failure. In the second, difficulty in reduction and in maintaining it was due to an overlooked fracture of the anatomic neck of the humerus, a thing which could not have escaped notice with the open treatment. In the third is shown a failure to ascertain the true condition, even with the aid of the Roentgen ray, until the joint was opened. The last instance is an example of an ideal method with an ideal result.

Concerning the issues raised in the first case, it may be recalled that before the days of anesthetics immediate attempts at reduction were rarely successful. "The older writers," says F. H. Hamilton,[1] "almost without exception, agree in declaring the reduction of these dislocations impossible until the fracture had united. And so late as the year 1828 we have the report of a case treated in this manner by a surgeon in Massachusetts." Hamilton goes on to observe that "in the event of a failure by these means the case ought to be treated as a fracture, and the earliest period after the union of the fragments should be seized on to accomplish the reduction of the dislocation."

But Gross,[2] in 1882, after stating the difficulties of reduction and noting the recommendation "to let the dislocated head of the bone remain in its unnatural situation," says:

> Such an idea, however, it seems to me, must be perfectly delusive; for it is impossible, under such circumstances, for Nature to make a good or useful joint. Instead, therefore, of pursuing such a practice, I should not hesitate, if a case of the kind were to present itself to me, to cut down on the dislocated bone and push it back into its natural position; or if this be impracticable or deemed inexpedient, and the head of the bone be found to compress the axillary plexus of nerves, to perform excision.

It must be evident that anything is preferable to leaving the dislocation unreduced. Most of the cases so treated will come to the surgeon after they are "old," that is, when fixation has occurred, and generally there is then no alternative but excision. Old unreduced dislocations are the source of veritable nightmare to the practicing surgeon, whether he be the beginner or the master, and compared to them ununited fractures pale into nothingness.

Besides the trouble in reduction, one is liable to break the bone in the attempt, as was done in the case reported. This accident has happened to operators many times. T. S. K. Morton[3] records two instances, happening on successive days, in which he fractured the neck of the humerus while applying the Kocher method to old dislocations of the shoulder (without previous fracture). Finckh[4] also mentions two cases. In one in which the arm was dislocated three months before, the bone was broken by rotatory movements, and in the other, a month old, by forcibly raising the arm. Pseudarthrosis was obtained in both with good results. Another case is that of Zschock,[5] who, in an attempt to reduce a dislocation of three months' standing, fractured the humerus in the vicinity of the head and the patient recovered perfect use of the arm.

The second case inculcates the perplexities of diagnosis as nothing else could, emphasizing the fact that so many cases of supposedly simple dislocations at the shoulder are found, after being exposed to view, to be complicated by fracture of the neck of the humerus.

1. Fractures and Dislocations, 1866.
2. System of Surg., vol. i, p. 982.
3. Philadelphia Polyclinic, Dec. 15, 1894.
4. Beitr. z. Klin. Chir., 1896-7, xvii.
5. Beitr. z. Klin. Chir., 1904; supplement Heidelberg clinic, 1903.

Especially is this true of the anatomic neck. In this condition accurate diagnosis is at times impossible and, therefore, rational treatment can not be applied with confidence. A failure to observe this complication explains the predicament often encountered of a shoulder thought to be restored, because there was free movement, when in reality there was the preternatural mobility of a fracture within the joint. If this were a new matter one would feel much more as if it were necessary to go further into details.

Several important cases are reported in the literature. Engle[6] noted the existence of a former fracture at the anatomic neck in the case of a man 54 years old, who had a dislocation reduced (?) without anesthesia, but whose shoulder had never ceased to give him pain; reduction under narcosis was unsuccessful and an incision was made, revealing the condition as expressed above. Schüller[7] relates the instance of a woman 81 years of age who sustained a fracture of the scapula (through the glenoid fossa), with some doubt as to whether there was also fracture of the humerus. The accident occurred Feb. 28, 1898, and not until May 1898, was a Roentgen ray picture taken, which showed a fracture of the scapula as specified, and, besides this, a healed fracture of the head of the humerus through the anatomic neck.

The same conditions may obtain in fractures of the surgical neck, though this particular injury is more readily recognized. Finckh[4] mentions a case in which, two years after a luxation of the humerus, the patient complained of pains running from the shoulder downward, with a loss of power in the arm and fingers and a weakening of the radial pulse on that side. After incision the arm was replaced, when there was discovered a repaired fracture of the surgical neck of the humerus, with a considerable callous thickening.

That the Roentgen ray is not always reliable is proved by the third case in our series. Interpretation of the findings is the important element, and this may present as many difficulties as the ordinary examination. Other instances are not lacking to show failures of the skiagraphic view. In a demonstration of skiagrams of fractures of the upper end of the humerus, Immelmann[8] thus speaks of the question under consideration:

> Diagnosis is especially difficult in the case of associated dislocation of the fractured head of the humerus, and correct diagnosis is then possible only when the case comes under immediate observation. If there is much swelling and displacement of the fragments, the configuration can not be recognized.

A unique case of C. B. Porter's[9] forcibly impresses the point taken. It was a double dislocation of the humerus in which the Roentgen ray showed no evidence of fracture, but, on a failure to reduce either of the luxations under ether, incisions demonstrated fractures of the surgical neck of the humerus in each and good results followed in both.

The last case on the list was approached in the light of knowledge just gained from the first three and, occurring at such a time, gave a favorable opportunity to apply the principles already settled on as a consequence of this experience. It had been observed that the obstacles in the way of successful management of these cases were, first, the uncertainty of diagnosis; second, the practice of waiting too long before resorting to the so-called radical measures; and, third, the fact that damage was done and nothing accomplished by too severe and prolonged manipulations.

The case in question was a propitious one. The accident had happened but a few hours before, the diagnosis seemed assured and no undue handling of the parts was indulged in. The test was sufficiently rigorous, however, for the patient was the oldest in the series and had other injuries, while the operation was done in the country at the physician's office and none but the simplest means were at hand for securing aseptic technic. The outcome of the case was all that could be wished for.

The question spontaneously comes: Is it not better to cut down at once, in every case of dislocation at the shoulder-joint associated with fracture of the anatomic or surgical neck of the humerus, without subjecting the parts to the traumatism incident to the usually vain endeavors of reduction by the ordinary methods? If the evidence adduced here shall be taken as a guide, this query will be answered in the affirmative. An injury of this sort is to be looked on as an emergency needing a surgeon's immediate attention, just as an acute appendicitis or a strangulated hernia would be regarded. Indeed, the comparison might be pushed further, and it would be proper to place manipulation of the joint under these circumstances on the same footing as taxis in a case of strangulated hernia. No modern surgeon thinks it justifiable to use prolonged taxis, but opens the canal, reduces the hernia and performs a radical cure at the same time. So in fracture-dislocation of the shoulder the deduction is forced on us that quicker recoveries, better permanent results and fewer deformities will be obtained by the early incision. Even in cases of doubt it is preferable to expose the parts to view rather than to wait in the hope that Nature and time will clear it up.

REVIEW OF CASES IN THE LITERATURE.

Though the literature of this subject is not voluminous, there may be seen many instances on record illustrating just the need for enforcing the points developed above. Schoch[10] describes the case of a patient who came to him two days after injury with a temporary setting, in which bloodless reduction, in spite of every possible manipulation, proved impracticable. The patient was then kept in a recumbent position for two weeks with iced bandages applied to the shoulder. A skiagram showed a fracture at the surgical neck of the humerus with dislocation. An incision confirmed this diagnosis, and the reduction was effected with comparative ease, giving a good result after some months. It would appear that a more rational plan was to make the skiagram when the patient first came in and then cut down on the joint, not waiting for fourteen days to pass. In his report Schoch collects from previous writers nine cases, in which arthrotomy had been performed all with more or less good effects. In the discussion of a paper by Dollinger,[11] von Eiselsberg said that "in the complication of dislocation of the shoulder and fracture of the surgical neck of the humerus the surgeon should resort to laying open the injured part by incision, followed by suture and reduction of the dislocation"—a course of treatment that he pursued successfully in one case.

McBurney,[12] who has done much to develop the treatment of this condition, has reported two cases of complicated shoulder dislocation, one associated with frac-

6. Arch. f. Klin. Chir., 1897, lv.
7. Arch. f. Orthop., 1904, ii, 58.
8. Deutsche Med. Wochschr., Mar. 12, 1903, 83.
9. Boston Med. and Surg. Jour., April 2, 1903.
10. Beitr. z. Klin. Chir., 1900-1, xxix, 103.
11. Centrbl. f. Chir., Dec. 6, 1902, xlix.
12. Ann. Surg., 1896, xxiii, 501; Trans. Amer. Surg. Assn., 1903, xv, 323.

ture of the anatomic and the other of the surgical neck of the humerus. In the first case (1896), seen three weeks after the injury, prolonged manipulation failed, the incision was made, the fragments reduced and adjusted and sutured with catgut. At that time he stated that the "open method is not recommended except in cases where proper and harmless methods to reduce by manipulations have been faithfully tried and failed." Seven years later (1903), however, in reporting the second case, in which the patient was referred to him two weeks after the injury, no account of any preliminary manipulation is given, but the incision was made as before, and such perfect apposition was secured that no suturing was deemed necessary. Four months later the patient claimed that the arm was as good as before the injury. A comparison of these two cases will show that a sounder course is to do a prompt arthrotomy without previous manipulation and that in most instances suturing will not be required.

FREQUENCY.

A few estimates have been made on the frequency of the injury under consideration. Jones[13] states that out of two hundred complicated dislocations of the shoulder skiagraphed he found sixteen connected with fracture of the surgical neck of the humerus. In all the cases the patients were over 30 years, most commonly between the ages of 40 and 50. Dollinger[11] collected nineteen cases of dislocated shoulder in his clinic and three were associated with fracture of the upper extremity of the humerus. Finckh[4] places the highest rate of plain shoulder dislocations between the ages of 21 and 30 years, while he reports five cases in which there was also fracture of the humeral neck and the ages of these ranged from 49 to 64 years. Apparently, then, the condition occurs more often than many may imagine, and is seen later in life than cases of simple luxation of the shoulder.

METHODS OF REDUCTION.

In regard to methods of reduction, it may be said that there are no specific directions to be given. The difficulties attending replacement, particularly in "old" cases, have been demonstrated and are vividly realized by one who has tried it. There is nothing more unruly than the misplaced head of a bone when its connection with the shaft has been severed. Suggestions, however, are now and then offered which may be of service. Jones[13] thinks that the dislocation should be reduced at the earliest moment. A method which has proved most successful in his experience is the forcible extension of the arm held vertically, with often very hard pushing upward of the fragment. He very rightly asserts that, having reduced the dislocation, the fracture is of comparatively little moment. Within two years Hamilton had two cases in which he could not effect reduction, though he had the patients under ether (one for over an hour), with the result that the fractures united in both cases promptly, and attempts were subsequently made to reduce the dislocation, but "to no purpose." He states further that "it is quite doubtful whether extension in these cases is of any service."

No one will deny that the average practitioner of medicine, or, indeed, the experienced surgeon, can not easily reduce such a dislocation, but that in the majority of cases he will fail.

13. Brit. Med. Jour., June 16, 1896, 1386.

OPERATIVE TECHNIC.

The technic of the open treatment presents less difficulty, granting an ordinary acquaintance with the principles of surgical procedure. The incision to be preferred, by all odds, is that beginning at or near the acromial process and passing directly downward through the fibers of the deltoid muscle or between that and the pectoralis major. Incisions in any direction over the dislocated head of the humerus are not to be advised, as there will surely be trouble in returning the bone into the glenoid cavity. In recent cases the luxation rarely fails to be reduced with facility; in longstanding ones, reduction is always troublesome and at times impossible. Special instruments are occasionally required. Different operators have employed a gimlet, cork-screw, bone forceps or other device.

McBurney was probably the first (1896) to use a specially-designed hook, which is inserted into a hole previously drilled into the bone and with which great force can be applied. In one case Curtis[14] could not replace the head of the humerus by this instrument, because the bone was too soft and the hook pulled out; so that he divided the capsular bands and, by means of his finger and blunt instruments used as levers, he was finally able to force the head into the glenoid fossa. Gaudier[15] speaks of effecting reduction by the aid of a Jacvël hook.

DRESSINGS.

Having replaced the head of the bone and adjusted the fragment to the shaft, the next step is the retention dressing. The ideal case seen and incised early, will hardly ever need suturing or wiring of the bone ends. The late cases will sometimes demand this. After proper apposition is obtained, some appliance must be put on both to keep the bone in line and to protect the joint. The dressing most in vogue on the continent has been the Middeldorp triangle, which is formed of three narrow wooden splints made together as a frame and having its apex in the axilla. The sole object of this apparatus is to keep the arm in a position of abduction. Such a position may be had in other ways. It can be done by applying plaster-of-Paris bandages to the chest and upper extremity so as to hold the arm abducted at an angle of 45 degrees, as used by Judet[16] in three cases.

Schüller[7] tells of obviating pressure on the thorax by an "angle-iron" bandage of sodium silicate applied, in his case, to a patient 81 years old. The arm in abduction is certainly an important element in the treatment, but one need not feel dependent on any particular form of apparatus. A wedge-shaped pad in the axilla and a shoulder cap of plaster-of-Paris put on with a roller bandage will answer every purpose. The after-treatment may be summed up in a word by saying that under no circumstances should the fixation-dressing be kept on longer than two weeks and that, of course, massage and passive motion should be begun early.

CONCLUSIONS.

1. Fracture of the neck of the humerus, complicating dislocation at the shoulder, occurs more frequently than is usually supposed.

2. The injury is difficult of diagnosis and often escapes the most careful external observation or even the scrutiny of the skiagraph.

14. Ann. Surg., 1896, xxiii, 737.
15. Rev. de Chir., 1904, xxx, 800.
16. La Presse Méd., Jan. 26, 1907.

3. Ordinary expectant methods have produced many useless arms and functionless joints.

4. The only rational treatment is to cut down over the joint, reducing the dislocation and setting the fracture at once, immediately after the injury.

DISCUSSION.

DR. ALBERT KOCHER, Berne, Switzerland, stated that he has seen in his country many cases of fracture of the shoulder joint combined with dislocation. He was interested to hear that Dr. Royster has seen cases in which the fracture went through the anatomic neck of the humerus, as he has only observed cases where the surgical neck of the bone was fractured combined with dislocation of the shoulder joint. As to the etiology of the fracture, he thinks that there must be an injury, especially to the joint, to cause a dislocation and fracture combined of the shoulder and the bone itself. That is the experience he has had in these cases. Dr. Kocher regretted that cases are seen in which the fracture is produced by attempts at reduction of the dislocation; that is to say, when the method of reducing the dislocation advocated by his father, Prof. T. Kocher, has been tried. His present opinion is that an exact diagnosis should be made in dislocation of the shoulder joint as to the place of the dislocation so as to make a good reposition. The method is not to be applied to every dislocation of the shoulder. The use of the method in a case where it is not applicable, is followed, not infrequently, by a fracture of the surgical neck of the humerus. Dr. Kocher agreed with the essayist as to the treatment. The diagnosis is to be made at once, and operation should follow the diagnosis. The Kochers cut down in front of the bone without going through the deltoid muscle, but between the deltoid and pectoral muscles, so as to prevent any muscle injury.

DYSENTERIC ABSCESS OF THE LIVER IN THE PHILIPPINE ISLANDS.*

JOHN R. McDILL, M.D.

MANILA, P. I.

As a complication of intestinal amebiasis, hepatic abscess is the most distinct surgical disease of the tropics. It occurs usually in neglected, ulcerative dysenteries of young male adult Americans or Europeans, although amebic dysentery is very common and runs a milder course among Filipinos, Japanese and Eurasians. The Chinese are rarely found in our hospitals, and it is believed that their habit of tea drinking and eating cooked foods protects them, to a great extent, from tropical bowel diseases. Liver abscess is occasionally found in all these races, but the whites furnish over 90 per cent. of the cases.

Since American occupation, dysentery, its cause and its curability have become so generally understood, even among the laity, that often on the first appearance of bowel trouble a specimen of the stool is sent for examination, and when amebas are found patients submit to rational treatment until cured; and, as examination of the stools is routine practice in cases of all kinds, amebic disease is now recognized early. The result is that abscess of the liver is already becoming more infrequent.

Alcoholic excesses are almost always a prominent part of the clinical history. The relative infrequency of liver abscess among the exceedingly temperate natives, who are also sparely provided with fatty tissue, even in the liver, which is normally a most important storehouse of fat, points to overindulgence in drink and food as an important predisposing cause. A liver damaged by alcohol in a man with amebic dysentery, as in typhoid and other enteric diseases, is the constant receptacle, through the portal circulation, of quantities of septic matter, intestinal parasites and micro-organisms, acting as a septic vault and filter for the diseased intestine.

That large amounts of such materials are disposed of by even the best of livers without abscess formation is one of the most remarkable characteristics of this organ; its inherent ability in this respect is no doubt aided by its most important anatomic feature of having two systems of blood supply.

When the intestinal disease is very active and ulcerating, there often occurs an acute parenchymatous, cloudy swelling of the entire liver, creating the general *locus minoris resistentiæ*. A septic ameba-laden embolus from the ulcerated colon, of sufficient size to block a portal capillary in such a liver, is probably the only real beginning of an abscess. Wonder is that abscesses are not more frequent. Amebas and their symbiotic and other bacteria reach the liver through the portal blood stream more or less constantly during an intestinal amebiasis. Musgrave and Clegg[1] began publishing in 1904 a work which plainly established that amebas are amenable to changes of environment and that the power of an ameba to propagate under new conditions depends on the similarity between its new environment and its former one and also possibly on its ability to produce lesions in the tissue. They have shown this to be true of intestinal infections, and might not the occurrence of liver abscess depend, as they point out, not so much on whether amebas reach the liver, but on whether the liver environment had been brought to a condition approaching that of the ameba infected bowel.

Musgrave is continuing his government laboratory experiments, also his clinical observations in St. Paul's Hospital, Manila, and the importance of the possibility of an explanation of the exact mode of action of amebas in producing pathologic lesions can not be overestimated.

The development of an abscess may be exceedingly slow in some cases, and Musgrave has established the fact that an amebic abscess of the liver may exist without discoverable lesions in the bowel at the time of the death of the patient. In some of such cases there was a clear history of dysentery months before; in one case no history could be elicited, but Musgrave's conclusion is justifiable, that all cases in which, at autopsy, intestinal lesions were not discernible, the patient had previously had amebic colitis from which amebas reached the liver during the period of bowel ulceration. Cases of abscess apparently occurring years after a dysentery are probably of an unnoticed and recent attack; diarrhea is not a constant symptom of amebic dysentery. Such cases have also been explained by some as an aroused latency or secondary infection of an old encapsulated and partly resorbed small abscess.

LOCATION, SIZE AND NUMBER.

Abscesses of the liver vary in size and number from the solitary one, in over 60 per cent. of the cases, which may even occupy the entire right lobe, to the multiple, disseminated ones occurring in tens or hundreds and varying in size from a pinhead upward. The cases coming to operation have usually been either single or at most two or three in number which coalesced by in-

* Read in the Section on Surgery and Anatomy of the American Medical Association, at the Fifty-eighth Annual Session, held at Atlantic City, June, 1907.

1. Publications, Biological Laboratory Bureau of Science, Manila, P. I., 1904, xviii, 1.

crease in size. The right lobe is involved in about 95 per cent. of the cases and is usually the only part affected. The favorite location in this lobe is its upper segment. Abscess of the left lobe has been diagnosed and successfully operated on in one instance in our series of about 100 operative cases, and in February, 1907, a patient with perforation into the lesser peritoneal cavity recovered after operation by Dr. F. W. Dudley, of St. Paul's Hospital, Manila. Musgrave's postmortem studies show no relation of abscesses to the location of intestinal ulcers, nor is it yet possible to determine the time of development of liver abscesses with reference to the bowel infection.

COURSE OF THE DISEASE.

In fatal, untreated cases the patients die, without perforation, from sepsis due to mixed bacterial infection which, in turn, hastens the end by aggravating the primary intestinal disease. Perforation into the peritoneal cavity and fatal peritonitis is a common termination. Spontaneous cure commonly follows perforation into the right pleura or lung or both. A pleural or a subdiaphragmatic abscess may open externally anteriorly, and it is possible for cure to follow perforation into the stomach, colon or other hollow viscus, but it is very rare. Sterile abscesses or abscesses with a mild bacterial admixture may exist a long time without symptoms, may heal entirely or become encapsulated and be only accidentally discovered at autopsy.

SYMPTOMS AND DIAGNOSIS.

In most cases the clinical picture with a few of the symptoms lead the experienced physician to an early agnosis, although large symptomless abscesses have been overlooked entirely by the best of observers. Fever is usually present, but not characteristic; daily or irregular rigors with rise of temperature and perspiration is very suggestive, but cases have been known to run an afebrile course. As an abscess enlarges or approaches the surface of the liver, pain appears and is rarely severe. The pain so often complained of in the shoulder is generally found more exactly beneath the right clavicle and usually indicates involvement of the upper and posterior portion of the right lobe. When the liver is swollen, pressure beneath the costal arch and over the lower right intercostal spaces is usually painful. Sitting, standing or lying on the left side sometimes produces pain. The patient is most comfortable on the back.

Leucocytosis in rapidly developing abscesses is a constand condition and an important diagnostic aid. The primary intestinal disease, which is generally worse during a liver abscess, may alone be responsible for a persistent leucocyte count of 15,000 to 20,000, but this factor can be eliminated to a great extent by colonic irrigations and saline laxatives. A persistent and increasing high afternoon count without many other symptoms has come to be regarded as the most positive indicator of pus, because the white count drops to near normal about 48 hours after drainage.

PHYSICAL SIGNS.

The liver usually enlarges and can readily be palpated beneath the costal arch, and the area of dulness upward shows the extent of the swelling. The fact that the enlargement is often more upward than downward (Osler) is due to the dome of the liver being the favorite site of abscess formation. In old and indolent abscesses no swelling may be demonstrable. Fluctuation, of course, can never be detected.

GENERAL SYMPTOMS.

Jaundice and stomach symptoms are not constant, but a dry, irritating cough usually means that perforation into the lung is imminent, and even immediate drainage does not always prevent its occurrence. Another rare symptom is fatal intestinal hemorrhage, which is never observed in intestinal amebiasis except when complicated by hepatic abscess.

Diagnosis is not difficult in marked cases, but symptoms fail and vary so greatly in some that the diagnosis is long in doubt. We then depend more on the general appearance of the patient and the clinical picture he presents for a provisional diagnosis, and if the condition is not very serious observation is extended another week or two, by which time a diagnosis can usually be made positive. Exploration with a hollow needle and syringe through the abdominal wall or across the pleural cavity is dangerous. If such a procedure is decided on, preparation for operation should be made, and if pus is located immediate incision before withdrawing the needle is the only safe plan.

The best way to examine a liver for pus is to expose sufficient of its surface to allow of deliberate and efficient exploration, both digital and by needle. If pus is not found, pack the wound wide open and explore again every two or three days after adhesions have formed. I have not had an opportunity to test the value of the Roentgen rays in diagnosis.

TREATMENT BY DRAINAGE THROUGH NEW TRANSPLEURAL ROUTE TO THE LIVER.

Unless an abscess is plainly presenting anteriorly, where it is very accessible, and in cases with adhesions, operation amounts only to a simple oncotomy, the best access to the greatest area of the liver for purposes of exploration and drainage is by a transpleural route. This we accomplish, usually avoiding a pneumothorax, by a four-inch partial resection of the tenth rib and, if necessary, the ninth rib in the midaxillary line. The muscle wounds necessary to the rib resection are then closed by catgut. The result is a loose and movable section of the thoracic wall, which is then pressed inward and held firmly against the diaphragm by the fingers of an assistant in order to prevent pneumothorax. The operator meanwhile makes a new incision below and along the upper border of the eleventh rib, at least three inches in length, carrying it to the same extent through the diaphragm, exposing the Liver. The two incised edges of the mobilized thoracic wall and diaphragm are then clamped together with two or three forceps, which closes the pleural cavity and prevents the entrance of air. The enlargement of the liver upward facilitates this maneuver by narrowing the base of the pleural cavity and giving a good background for the pressure exerted by the assistant to obliterate the pleural space while the operator is going across it. Catgut sutures can be quickly substituted for the clamps. The right lobe of the liver can now be freely palpated digitally, and if the opening is made large enough a small hand can be introduced; this I have never found necessary. More room upward can be secured by dividing both walls between clamps, first securing what is to be the upper angle by a suture through the entire thickness of both diaphragm and mobilized thoracic wall. A few catgut sutures can replace these clamps. Sometimes no air enters the pleural cavity when any low transpleural

route is followed. This can occur when there are no pleuritic adhesions, because the liver when greatly enlarged upward will, in some subjects, obliterate the lower part of the pleural space by pressure from within in exactly the same way as we endeavor to do it by external digital pressure. The liver, in acute cases, is bluish in color, soft and pulpy to the touch, and often bulges freely into the wound. The guides to underlying pus are recent parietal adhesions or an area of induration. The immediate neighborhood of a liver abscess is hard and resistant, the rest of the organ is very soft. When ready to incise or to explore with the needle, pack off with a ring of gauze, perhaps anchoring it to the surface of the liver or parietal layer of peritoneum; open at once directly or by using the needle as a guide. If the operator prefers to wait for adhesions, fasten the needle carefully *in situ* or the pus may not be found again, as the liver invariably reduces rapidly in size after needling. As soon as possible the local treatment of the primary intestinal lesions must be resumed.

CONCLUSIONS.

1. Liver abscess as a complication of amebic disease of the colon always has amebas in its wall as the specific pathogenic organism of the disease.

2. This complication can be reduced to a minimum by early recognition and proper treatment of the primary intestinal amebiasis.

3. Solitary abscesses, which are sometimes formed by confluence of more than one, are the only ones, so far, amenable to successful surgical treatment, which is by drainage.

4. The best route to the liver for exploration and drainage is by transpleural methods, which avoid lung collapse.

5. Early operations are most favorable and over 90 per cent. of operable cases coming promptly under surgical treatment should recover.

6. Most of the fatal operable cases were due to poor surgical judgment before much experience had been acquired.

DISCUSSION.

DR. CHARLES A. POWERS, Denver, considered the description of the operative procedure a good one. He asked what attempt, if any, Dr. McDill makes to locate secondary abscesses at the time of the original operation. On two occasions on which Dr. Powers has opened an abscess, the patient has gone on to a speedy death from sepsis. At the autopsy other abscesses were found which probably existed at the time of the operation.

DR. HARVEY CUSHING, Baltimore, thought that few cases of amebic abscess of the liver have been seen by those present at the meeting, but he thought that in the future more such cases will be seen, because now we have come in possession of tropical colonies in which we may expect to get tropical diseases. After the campaign in Cuba, in 1898, Dr. Cushing saw a number of cases of amebic dysentery and liver abscess as a result of the dysentery. He asked Dr. McDill whether he regards the ameba as a secondary invader, or whether he holds the view of Flexner and others as correct, that the Shiga bacillus is the primary invader, and that the ameba comes next. At least, animals inoculated with the bacillus of dysentery in its pure form have the ameba enter as a secondary invader. Dr. Cushing was very much interested in Dr. McDill's description of his ingenious transpleural operation. All surgeons, he said, who have had an opportunity to operate on these patients realize how difficult it is to approach these abscesses safely. The abscesses he has seen have been large, and probably were not seen at as early a stage as were those seen by the surgeons in Manila, because these patients come to the surgeon through the medical wards, and there is the usual delay that occurs when cases are on the borderline, as these cases must be considered to be, before they are transferred to the surgical side. The fact is, he said, that an abscess high under the dome of the diaphragm is a difficult thing to approach, and, therefore, Dr. McDill's operation is a distinct contribution to operative methods. The evacuation of one of these abscesses is not an easy thing to do, and sometimes they leak, and this tomato soup full of ameba is an appalling thing, at times. The abscess may even be close to the surface, and if evacuated the liver recedes and there is a great chance of the liver becoming infected, though Dr. Cushing believes that many of these abscesses contain no organisms other than the protozoa.

DR. JOHN R. MCDILL, Manila, P. I., replying to Dr. Powers with regard to secondary or multiple abscesses, said that they do not concern themselves with that during the operation, unless, with the finger in the opened abscess, they can detect a bulging on the opposite wall. If it appears like another abscess it is needled. If not found at that time, they find the second abscess later, when it has enlarged. If septic conditions persist, a needle is passed through the wound into the liver to find other abscesses. Usually, however, such multiple abscesses coalesce and take care of themselves. Replying to the question of Dr. Cushing, he stated that Dr. Musgrave believes that the intestine must be in a certain condition favorable for the growth and development of the non-pathogenic into a pathogenic ameba. Musgrave believes that there is not more than one kind of ameba, and that the difference in shape, size, etc., is due to environment and symbiosis. Dr. McDill referred to a specimen of dysentery of the colon which he saw in the pathologic exhibit. The patient is said to have presented typical amebic symptoms and a laparotomy was done and suppurating peritonitis found. At the autopsy miliary abscesses of the liver were also found. There was another specimen of "ulcerative colitis," and one of "dysenteric colitis," but not one word as to the presence or absence of the amebas in the stools. He thought that these cases were almost certainly cases of amebic dysentery. The ameba, he said, is universal, but causes a more pronounced disease in the tropics than in temperate climates. He has found that the routine examination of the stool in every case is of the greatest advantage, and it is surprising how many unsuspected pathogenic parasites, or evidence of them in the shape of ova, are found. He advised examining the stools after the administration of a dose of salts; say, the third or fourth watery stool. The examination of an ordinary passage may be negative for ameba, but if a saline purge is given and the watery part of the stool is examined, the ameba will be found almost invariably when present.

Clinical Notes

TREATMENT OF TETANUS BY INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE.

WITH REPORT OF A SUCCESSFUL CASE.

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The sodium and calcium salts have been shown to have distinct stimulating properties for some of the functions of the animal organism. It occurred to Meltzer that the salts of magnesium, another element found plentifully in tissues, may have an inhibitory action on these same functions. This idea was subjected to a large series of experiments by Meltzer and Auer,[1] and they have obtained some striking results confirming the correctness of the hypothesis. It was found that a certain dose of magnesium sulphate will, when subcutaneously injected, produce a deep, often long-lasting

1. Am. Jour. Physiol., 1905, xiv, 386; 1905-06, xv, 387; 1906, xvi, 233.

anesthesia, with complete relaxation of the voluntary muscles and abolition of some of the less important reflex activities, which anesthesia terminates in recovery. Not a single instance was observed in which that salt produced an increase in excitation, and the effect of the salt was invariably in the direction of a reduction of excitation or of its complete temporary or permanent abolition. When injected intravenously the magnesium salt was found to effect the centers in the medulla oblongata. There was depression of the respiratory and deglutition centers, but the cardiac mechanism was practically undisturbed. Direct application of the salt to nerve trunks never produced irritation, but caused a block for both afferent and efferent stimuli. Washing the magnesium salt away quickly restored the functions of the nerves.

After having found that general anesthesia could be produced in monkeys by intraspinal injection of a solution of magnesium sulphate, Meltzer[2] recommended that the salt be used in this manner for the production of surgical anesthesia. He advised the use of one-quarter of the dose used in the animals. This method has been used by himself and Haubold,[3] and a few instances of its employment have been reported by others. Blake[4] has collected fourteen cases so treated, several of which were his own, and so gives us a series of cases from which to draw conclusions as to the action of magnesium sulphate when intraspinally injected in human beings. Here it is seen that the action of the salt is identical with the effects on animals described by Meltzer and Auer. Anesthesia and relaxation of the voluntary muscles always occurred, and abdominal operations, as well as operations on the lower extremities and perineal region, were performed after intraspinal injections of a 25 per cent. solution of magnesium sulphate. One cubic centimeter for about every twenty pounds body weight was used. In some cases small amounts of chloroform were given in addition.

Besides the production of muscular relaxation and anesthesia the tendon reflexes were lost, the respiration was usually slowed and there was as a rule a rise of temperature, which occurred on an average of twenty-two hours after the injection and which varied from 100.6 to 105. Six patients lost consciousness, while there was retention of urine in twelve of the fourteen cases. In but one case was there any disturbance of cardiac rhythm. Of the untoward effects, slowing of respiration was the most serious and sometimes required artificial respiration. Washing out of the spinal canal with normal salt solution, however, seemed to relieve this symptom. It can be said, therefore, that in these fourteen cases no permanent harmful effects were seen after intraspinal injections of a 25 per cent. solution of magnesium sulphate.

Meltzer advised the application of his discovery in the treatment of tetanus, where such marked nervous excitability occurs and where muscle spasm is so often the cause of death, for heart failure or asphyxia during a paroxysm usually produces the fatal termination. In spite of the fact that there is evidence to show that the use of the salt intraspinally is safe in proper doses, and that the present generally used methods of treating tetanus are so inadequate, but few cases seem to have been treated by this method, judging by the number found in the literature. I hope to show that the method deserves much wider use, and that an extensive series of published cases is very desirable.

Blake reports the first case, a boy weighing 115 pounds, who was admitted to the Roosevelt Hospital on the second day of a typical and severe attack of tetanus. The incubation period was seven days. Antitoxin was at first used without benefit. Magnesium sulphate, 4.5 c.c. of a 25 per cent. solution, was intraspinally injected on the fifth day with excellent results. A general relaxation, including the muscles of the jaws, occurred and the patient was quite comfortable for 33 hours. The symptoms returned, but repeated injections were given on the seventh, ninth, tenth and sixteenth days, and the patient made a complete recovery. Marked relaxation and almost total suspension of symptoms resulted from each injection.

The same author reports a second case in which 1.5 c.c. of the magnesium sulphate solution were injected into the spinal canal of a 4-years-old child weighing 44 pounds, who had a very severe tetanus and who died 28 hours after the appearance of the first symptoms. The incubation period was seven days. No effects of the injection were noted.

Logan[5] reports two cases. The first was a boy of 11 years, who had an estimated weight of 80 pounds. Tetanus set in nine days after a blank cartridge wound of the hand. After getting no results from the use of antitetanic serum, 4 c.c. of a 25 per cent. solution of magnesium sulphate were injected intraspinally on the second day of the disease. In 40 minutes relaxation was complete and remained so until 13 hours and 45 minutes after the injection, when the rigidity again made its appearance. Respirations became shallow, and a profuse bronchorrhea set in 4 hours and 40 minutes after the injection, but was apparently relieved by atropin. A second injection was given on the third day of illness. Fifty minims of the solution were injected and complete relaxation occurred in 25 minutes, but 2¼ hours later a convulsion occurred. After this convulsion muscular relaxation continued, but respiratory difficulties similar to those following the first injection occurred, the temperature rose, the pulse became weak and rapid, and the boy died on the following morning. Ether was given before each injection.

Logan's second case was a woman 24 years old, whose estimated weight was 100 pounds, and in whom the disease set in 17 days after vaccination. The incubation period was probably shorter than this, however. The onset was violent. Four cubic centimeters of the 25 per cent. solution were injected 30 hours after the onset, and again 17½ hours later. No effect was noticed, except a slight increase in time between the convulsions, and the patient died 50 hours after the onset of symptoms.

A fifth case is reported by Franke.[6] A man of 32 years developed tetanus 12 days after an injury to his fingers, and was admitted to the hospital six days later. The case was typical and the patient had convulsions from time to time. The fingers were amputated and 1 c.c. of magnesium sulphate solution was introduced into the spinal canal. This was followed by decrease in convulsions on the following day, but in four days the spasms were severe again and chloral hydrate was administered, but without effect, and on the next day 2 c.c. of the magnesium sulphate solution were injected. About one hour after this injection apnea was noted. Four days later 2 c.c. of the solution were again injected intraspinally. These injections, although small in amount, had a distinctly beneficial influence on the muscular spasms, and the patient made a good recovery.

The case I have to report is as follows, and for the privilege of reporting it I wish to express my gratitude to Dr. Morris J. Lewis:

History.—Boy, aged 11, who said he weighed 70 pounds. He was admitted to the Pennsylvania Hospital in the service of Dr. Morris J. Lewis, May 11, 1907 (No. 399). He complained of stiffness and "rheumatism." On admission his temperature was 99.6, pulse 112, respirations 40. He had been a healthy, active boy, but had had typhoid fever three years before. He

2. Med. Record, 1905, lxviii, 965.
3. THE JOURNAL A. M. A., 1906, xlvi, 647.
4. Surg., Gynecol. and Obstet., 1906, ii, 541.
5. THE JOURNAL A. M. A., 1906, xlvi, 1502.
6. Zent. f. innere Med., 1907, xxviii, 345.

had recently played considerably about a stable, but gave no history of any cut or injury as far as he could remember. Mother of patient said, however, that she had noticed, while combing the patient's hair, a small swelling on the right side of his head. This swelled up considerably and appeared as a small abscess, but did not rupture or "come to a head."

The illness began May 1, 11 days before admission, with slight pain in the jaws. Soon after this the jaws became stiff, and on the third day after the onset patient was taken to see a doctor, who said the trouble was probably muscular. This stiffness increased, and on the sixth day patient did not go to school. But on the following day he was able to go out and play ball, the stiffness being confined to the jaws. The exercise caused profuse sweating, and on returning home he had stiffness of the right side, especially affecting the leg. On the following day, May 8, general rigidity set in and gradually increased until admitted to the hospital on May 11. At this time he had had abdominal pains for four days. They were shooting in character, and came and went quickly. He had had "nervous spells" for several days, when he shook a great deal, but never lost consciousness. Had partial loss of appetite and had been able to take only liquid food. No vomiting. Bowels moderately constipated. Abdominal pain had been the chief complaint, but he had a slight cough with expectoration.

Note made soon after admission is in part as follows: "Patient is a well nourished, well-developed boy. He is entirely rational and intelligent. He lies in bed in a remarkably rigid condition. The head can not be moved, the jaws are tightly locked, and can be moved but a fraction of a centimeter. The corners of the mouth are drawn down, the eyes are held partly closed, and the patient has 'risus sardonicus' moderately. This is more marked when the features are drawn from time to time on account of sharp attacks of abdominal pain, of which he complains. The arms can be moved somewhat, but are very stiff to both active and passive movements. The muscles of the trunk are hard and rigid. The back is arched and the lumbar region is about 6 to 8 cm. above the surface of the bed. The abdomen shows board-like rigidity, and the legs are held immovably. When one attempts to lift the head the whole body is raised, the patient resting on his heels. The knee-jerks are so exaggerated that a rapid clonus is produced when the patella tendon is struck. No ankle clonus obtained, as the foot can not be moved. When the patient lies on his side the upper leg remains extended in the air without support, and not touching the lower leg. No cut, abrasion or injury of any kind found. Pupils equal and react to light. Somewhat contracted. There is no apparent facial paralysis. No glandular enlargement. Chest well formed. Respiratory movements slightly exaggerated and rapid. Lungs free from râles and apparently normal. Heart sounds are rather rapid, but of good quality, and free from murmurs. The rigid abdomen is not especially tender, except when palpation brings on muscular spasms. Spleen and liver not enlarged to percussion and not palpable. Every few minutes, especially when disturbed, the boy stiffens himself perceptibly, and there are muscular twitchings. At these times he usually moans quietly and complains of pain in his abdomen."

Diagnosis.—The diagnosis of tetanus was made, and on the afternoon of the day of admission, the eleventh day of disease, the first injection of magnesium sulphate was performed.

Treatment.—At 3 p. m. patient was given a small amount of ethyl chlorid as a general anesthetic, but after its use for less than one minute he had a violent spasm, especially affecting the muscles of respiration. He became extremely cyanosed, and of a dark purple color. He was revived finally by artificial respiration, but no more ethyl chlorid was given. Lumbar puncture was then done in the lower lumbar region and clear, watery cerebrospinal fluid rose in the manometer 235 mm. About 8 c.c. were withdrawn, when the cerebrospinal fluid rose to 130 mm. in the manometer. Three cubic centimeters of a 25 per cent. solution of magnesium sulphate were then fairly rapidly injected, and the needle withdrawn. In five minutes after the injection the neck was less rigid. In one hour there was distinct relaxation of the muscles, and at 5:30 p. m., two and one-half hours after the injection, a remarkable change was seen. The boy was drowsy, his neck could be freely moved, his jaws could be separated about 1.5 cm., the abdomen was soft, the legs and arms were relaxed, and no knee-jerks could be obtained. There was no apparent anesthetic effect. The boy seemed in excellent condition, and was comfortable except for a slight headache. Between 9 p. m. and 1 a. m. the patient regained some of his former rigidity, and when seen at the latter hour, ten hours after the injection, his abdomen, neck, and legs were rigid, but not so markedly so as at the time of admission. His jaws could be parted somewhat. On the morning of the twelfth day, 18 hours after the injection, the rigidity had almost reached the extent on admission, there was a return of spasmodic contractions, and a moderate rise in temperature.

The patient's mother was seen on this day for the first time, and she described the lesion of the scalp mentioned above. On examining the scalp there was found a small raised, slightly swollen area, about 1 cm. in diameter, and slightly boggy on pressure.

On the evening of the twelfth day the second magnesium sulphate injection was given. At 10:30 p. m. lumbar puncture was performed. Only one or two drops of spinal fluid were obtained, which did not seem to be under any pressure. Three and a half c.c. of the 25 per cent. solution were injected. At 11 p. m. the neck was less rigid and knees could be flexed slightly. Patient felt drowsy and more comfortable. Relaxation did not occur until 12:15 p. m., 1¾ hours after the injection, and then it was fairly complete, but knee clonus could still be obtained.

On attempting to excise the swollen area in scalp, patient complained of pain, so the area was infiltrated with Schleich's solution. It was excised with practically no pain, although several bleeding points were clamped. The area was carbolized with pure carbolic acid, treated with alcohol, packed with iodoform gauze, and a wet bichlorid of mercury dressing applied. The area excised was examined in the Ayer Clinical Laboratory. No tetanus bacilli were found in either smears or in sections. The tissue contained a subacute abscess.

On the thirteenth day of the illness at 8 a. m., 9½ hours after the second injection, the patient was bright and comfortable. His abdomen and legs were distinctly relaxed, but some rigidity remained. He slept well during the night after the operation, but complained of great thirst and drank much water and milk. During the fourteenth day the patient remained less rigid, and he could flex his knees voluntarily. The knee-jerks were less marked than at the time of admission, he had no convulsions, and but little pain in his knees and in his abdomen.

On the fifteenth day the heart and lungs were in good condition. During the day the rigidity gradually increased, and by night it was very marked. Lumbar puncture was done at 8:15 p. m. The spinal fluid rose 160 mm. in the manometer. About 3 c.c. were withdrawn and 4 c.c. of the magnesium sulphate solution were injected rapidly. At 8:20 p. m. no effect noted, but at 8:35 p. m. legs were distinctly relaxed, knee jerks exaggerated, but no clonus present. Abdomen distinctly softer, and patient was sleeping with his knees drawn up. At 9:20 p. m., one hour after the injection, he could turn himself readily from side to side, and at 10 p. m. he was almost perfectly relaxed, except for his jaws. His teeth could be separated about 1 cm., however, and he felt comfortable and drowsy. Knee-jerks could not be obtained, although the neck was a little rigid. Patient was everywhere very sensitive to the stick of a pin. At 10:50 p. m. he complained of slight headache and some pain in his feet. At 3 a. m. of the sixteenth day, 7 hours after the injection, the rectal temperature was 103. At 5 a. m. the neck seemed a little stiffer, otherwise the relaxation was excellent, while at 10 a. m., the abdomen was somewhat tense, but the legs were moved freely, the jaws could be separated 1.5 cm., the face was relaxed, and the boy had a distinctly improved expression. At 11:30 a. m. abdomen was more tense, clonus obtained in knees and general relaxation was less. This was 15 hours after the injection. Bronchial râles heard in chest.

On the following day, the seventeenth, there was moderate rigidity, but somewhat less than on the day before, and dis-

tinctly less than before the last injection of magnesium sulphate. Patient was comfortable and he had no more spasms. The rigidity never increased after this time, but gradually diminished. He had been sweating very profusely and there had been no retention of urine. He continued to complain of much thirst and drank large amounts of milk. On the eighteenth day the temperature was lower, the heart beat was regular but a little rapid, no murmurs heard, but a few coarse râles heard in chest. From the eighteenth to the twenty-second day the patient showed slow but definite improvement.

On the twenty-second day, seven days after the last injection of magnesium sulphate, the temperature, which had varied between 99 and 100 for several days, began to rise rather rapidly, and on the morning of the twenty-fourth day it reached 106.4. Coarse bronchial râles were heard in the chest, but otherwise the physical examination was negative. The scalp wound appeared clean, and nothing to account for the rise of temperature could be found. It quickly subsided on the following day, and reached normal, not to rise again. After this the improvement was marked and the rigidity gradually disappeared, the boy making a perfect recovery. At the time of his discharge, June 28, 1907, on the fifty-ninth day of his illness, the knee-jerks were still somewhat exaggerated, and the gait was slightly awkward.

Blood.—Leucocyte count was 10,750 per cubic mm. at time of admission, but was 16,700 two days later, the highest count obtained. On the twenty-seventh day after the marked rise in temperature the count was 6,300. Widal reaction negative. No leucocytosis later.

Urine.—A faint trace of albumin and a few hyaline casts were found, practically throughout the illness, and on the fiftieth day a few pale granular casts, but no albumin were found.

Besides the use of magnesium sulphate in the treatment, sodium bromid, 1 dram, and chloral hydrate, 30 grains, in twenty-four hours, were used during the first two weeks. Bromids were given throughout the illness, and a few doses of morphia, ⅛ of a grain, were employed hypodermically. The boy weighed 65½ pounds on the forty-sixth day, but weighed 70 pounds when discharged two weeks later.

COMMENTS.

Although no tetanus bacilli were isolated, the case was certainly one of tetanus. The symptoms were severe and were apparently becoming worse when the magnesium sulphate was used. The indefinite incubation period, the somewhat uncertain portal of entry, and the gradual onset of symptoms make it difficult to judge as to the real severity of the infection. The patient might have recovered without the use of the magnesium sulphate solution. But this is certain: the intraspinal injection of the salt did produce practically complete abolition of very severe symptoms for a number of hours. The suffering of the patient was greatly reduced and, although the operation of lumbar puncture must have been very painful, the boy asked to have it done again some hours after the first injection, when the symptoms were returning. The muscular rigidity was never as severe after each injection as it had been before it.

The dose was first 1 c.c. per 23 pounds, then 1 c.c. per 20 pounds, and finally 1 c.c. per 17.5 pounds. These doses are about the same as used in the cases on which surgical operations were performed, but the effect here was distinctly different. Although the patient was slightly drowsy, and this may have been from fatigue, nothing approaching loss of consciousness was noticed. There was no retention of urine, and, indeed, although micturition was usually involuntary and the amount could not be measured, the flow of urine seemed copious. The respirations were never even reduced to normal. After the first injection they fell from 36 to 32 per minute, and after the third from 40 to 32 per minute, but they remained at 48 after the second injection. In spite of this, however, the observations of others should caution users of intraspinal injections of magnesium sulphate to be prepared to meet failures of respiration. Means for performing artificial respiration should be at hand, and the spinal canal should be washed out with normal salt solution if failure of respiration demands it.

The changes in sensation were not carefully studied. After the first injection the feeling to the touch of the finger and to pinching of the skin seemed unimpaired. The scalp was not sufficiently anesthetic after the second injection to allow of excision of the swollen area, but the impression was given that the lack of pain produced by the operation was not wholly due to the use of the Schleich's fluid. After the third injection the boy was sensitive to the pin prick everywhere, but Dr. Meltzer says that there may be a disassociation of the various sense qualities, and that he has often found complete analgesia with the normal sense of pressure. Although there may be sensations to the prick of a pin, the pin may be stuck through the skin or the skin cut without pain. This being the case, my observations in this particular are of little value.

The only untoward effect noticed was slight headache after the first and third injections. There was a moderate rise of temperature coming on after the first injection. The fever was increased slightly four hours after the third injection, but not affected by the second one. The extremely high rise of temperature which occurred eight days after the last injection of magnesium sulphate can hardly be attributed to the salt, although I can offer no explanation for it. The marked thirst and profuse sweating did not seem to have any relation to the use of the salt. No purgative action was produced by the injections and, in fact, the bowels were very constipated. Castor oil and enemata were but weakly effectual during the early part of the illness. This observation is in accord with the findings of Meltzer and Auer,[7] who report that the effects of certain drugs and maneuvers which produce peristaltic contractions in the intestine can be counteracted by intravenous injections of magnesium sulphate, which do not embarrass the respiration.

It would seem probable that the solution of magnesium sulphate is distinctly better tolerated when intraspinally injected in persons suffering from tetanus than in individuals without the disease. As Dr. Meltzer suggests, a larger dose might be used. In the last contribution to the subject of the action of the salt Meltzer and Auer[8] have shown that in rabbits nephrectomy greatly increases the toxicity of magnesium sulphate, and that probably at least 50 per cent. of the salt is excreted by the kidneys. Therefore, in cases in which renal insufficiency is known to exist or is suspected the salt should be used with more caution.

In conclusion, I plead for a more extensive use of this method of treatment in tetanus, and urge that all cases, whether successful or not, be reported. I am sure that, in at least some cases of this terrible disease, Meltzer has suggested a remarkably beneficial method of treatment. Further study only can show its limitations and its worth. The treatment is probably only symptomatic, but so far specific serum therapy has been but of little value in well developed cases. Even if other methods are being employed, the intraspinal injections of magnesium sulphate may serve to relieve great suffering and may prove a life-saving measure.

7. Am. Jour. Physiol., 1906, xvii, 313.
8. Jour. Exp. Med., 1907, ix, 298.

HEMORRHAGE AFTER TONSILLECTOMY.*

OSCAR WILKINSON, A.M., M.D.
WASHINGTON, D. C.

The infrequency of hemorrhage after tonsillectomy justifies me in reporting two recent cases.

CASE 1.—Mrs. S. came to me suffering with a follicular tonsillitis, with a history of frequent attacks of a similar kind. On examination I found the right tonsil very much more affected than the left, lying embedded between the tonsillar folds, to which it was slightly attached. It had a number of follicular cavities which were filled with a cheesy, offensive débris. As soon as the irritation had been relieved I advised her to have the tonsil removed as a preventive of future attacks. The tonsil being small, it was easily raised from its bed with a pair of forceps. I seized it with a pair of forceps, running through the ring of Mathew's tonsillotome, drew it through the opening and thus excised it. The tonsil was all removed and there was a slight peeling of the tonsillar pillars. The hemorrhage at first was not excessive, but it failed to stop as readily as is usual in such cases. I made a local application of adrenalin, 1 to 1,000, which afforded some relief.

Having an engagement in Virginia at that hour, I was compelled to leave the patient with an assistant, with instructions to spray the tonsillar cavity with peroxid of hydrogen if the hemorrhage continued, and if this failed, to use compresses saturated in tannic acid and glycerin. I returned from Virginia in about an hour and found the patient almost completely exsanguinated. The doctor had used adrenalin locally without effect, had sprayed the tonsillar cavity with hydrogen peroxid and had used compresses saturated in tannic acid and glycerin. This latter remedy had given temporary relief, forming a clot which, however, would soon be pushed off by the hemorrhage from beneath. On examining the cavity carefully I saw that the hemorrhage oozed from the entire cut surface. I applied stiptic collodion without effect. I then resorted to Monsell's solution, which gave temporary relief, but within half an hour the clot became loose and the patient vomited about a pint of blood, and was very weak. Realizing that some more radical method must be attempted, I threaded a half curved eye needle with a black silk thread, and passing this needle through the posterior tonsillar pillar and out through the anterior tonsillar pillar, was able, with the assistance of Dr. Stevenson, to draw this needle through. I then packed the tonsillar cavity behind this thread with a piece of cotton saturated in tannic acid and glycerin. I drew this thread tight, drawing the tonsillar pillars entirely together. The hemorrhage ceased and the patient had an uneventful recovery.

CASE 2.—Two weeks after my experience with the previous case I operated on Mrs. M., removing her left tonsil, which was a rather small one of the follicular variety. In this case the hemorrhage stopped within a reasonable length of time. The patient walked home, a distance of six blocks, and as she entered the house her throat began to bleed. She attempted to check it by the use of ice gargles and hot solutions, but without success. I was called after she had been bleeding from two to two and one-half hours, and found her almost bloodless, being very weak and faint. I administered stimulants, gave adrenalin internally and applied it locally without avail. I used styptic collodion without results. I ordered a carriage and had her brought to my office. Immediately before leaving the house she vomited a considerable quantity of blood and was practically carried to the carriage. By the time she reached my office the hemorrhage had ceased and I had no further trouble with this case.

While I am an ardent advocate of the entire removal of diseased tonsillar tissue, my experience leads me to believe that we are more apt to have hemorrhage with our more radical operative procedures. The good results obtained justify complete removal, and with better instruments we are able to cope with the excessive hemorrhage when it does occur. I am aware that a different opinion has been expressed by good men, but these two cases of severe hemorrhage, and a similar one which I reported in the *Baltimore Eye, Ear and Throat Journal* in 1905, have all occurred in patients in whom a thorough tonsillectomy had been done. I have had made by the McKee Instrument Company a long-handled half-curved needle with the eye in its point for use in such cases as described above.

*Read before the Fairfax County (Va.) Medical Society, June.

UTERUS FORCEPS.

GEORGE B. SOMERS, M.D.
SAN FRANCISCO.

In operating on the female pelvic organs through an abdominal incision, it is often necessary to grasp the uterus for the purpose of fixing, holding or elevating it.

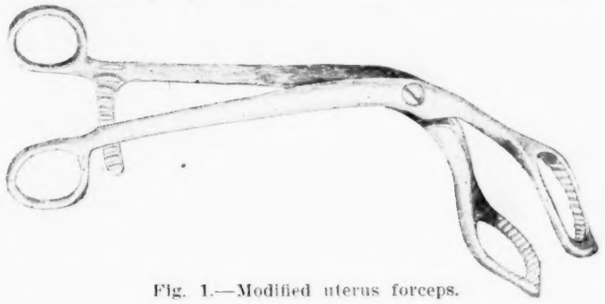

Fig. 1.—Modified uterus forceps.

Fig. 2.—Uterus forceps applied.

The instruments commonly used are vulsella, which often lacerate the fundus so severely as to produce troublesome hemorrhage and cause a waste of time in repairing the injuries.

The only instrument that I know of, devised to hold the fundus without injuring it, is one described several years ago by Cullen of Baltimore. I found his instrument inadequate, as it does not grasp firmly enough and allows the uterus to slip. To hold the fundus firmly and with the least possible injury, I designed the instrument whose appearance and use are sufficiently shown by the accompanying cuts.

It is needless to say that its chief use is in conservative work. Where a hysterectomy is to be performed, the injuries produced by vulsella may be disregarded.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

103 DEARBORN AVENUE . . . . CHICAGO, ILL.

Cable Address . . . "Medic, Chicago"

Subscription price.....Five dollars per annum in advance

[*For other information see second page following reading matter.*]

SATURDAY, AUGUST 10, 1907.

THE BRITISH MEDICAL ASSOCIATION ADDRESSES.

Suggestive food for thought is found in the addresses before the British Medical Association which met last week at Exeter. Advance copies of the addresses have been sent us through the courtesy of the editor of the *British Medical Journal,* and we regret that we can not give them in full or quote from them at length.

The main motive in the address of the president, Dr. Henry Davy, is the national importance of the health and the physical culture of the citizen. He points out that modern civilization, with all its labor-saving appliances, has a tendency toward physical deterioration which it behooves the medical profession to consider. He calls attention to recent progress in this direction made in Japan, where physical exercises form an important part of the national system of public education, and its effects as shown in the statistics of military conscription. It would appear from these that there has been a very perceptible effect in improving the stature of the Japanese, even within the short time since the reforms were adopted, and that their results were likewise shown in the hitherto unparalleled freedom from disease of the Japanese soldiers in their late war. In England, as in this country to a considerable extent, there is a tendency to make athletics a profession of the few, while among the mass of the people many of the manly physical exercises, once so popular, have become almost extinct.

In the address in surgery Mr. H. T. Butlin, the well-known British authority on morbid growths, discusses the question of the communicability of cancer and finds what he considers sufficient evidence of the actual autoinoculation of cancer which meets the conditions laid down by him, viz., that the assumed inoculation should be of the same variety of cancer as that from which the contagion has been derived and that there should be actual occasional contact to afford the opportunity for contagion. He admits that, while the evidence is sufficiently conclusive to him, his belief in the parasitic nature of cancer predisposes him to the belief that the disease is capable of autoinoculation. Furthermore, his study of the subject has so far altered his views that, while he formerly held that a broken surface was essential to successful autoinoculation, he is now inclined rather to believe it helpful but not necessarily essential, and that cancer can be communicated to a skin or mucous surface without abrasion. At present he is investigating the question of heteroinoculation in the human subject. The most probable condition of its occurrence would be in coition, and cases of coition cancer have been reported. Such occurrences, however, he thinks must be extremely rare, as the existence of ulcerated cancer in the male would probably deter him from the act, and in both male and female sepsis would be a bar. Moreover, it would be less likely to occur than autoinoculation, for the reason of the varying susceptibility of the individuals. A person having already a cancer may be assumed to be predisposed to the contagion, while a healthy individual may be extremely resistant. A practical point which he mentions is the importance of thorough disinfection of instruments used in cancer operations and the necessity of the avoidance of exposure of other surfaces to cancerous tissues.

The most suggestive of the three addresses, however, is that of Dr. W. Hale White entitled "A Plea for Accuracy of Thought in Medicine." The criticisms he makes are not all new, but he puts them in a way that should attract to them some attention. Too many medical men are susceptible to what he calls the "Mesopotamia-like soothing power of words" irrespective of their meaning, and most of us incur the temptation of sometimes using words to cover our ignorance. We are too often afraid, he says, to say we do not know. All human beings desire to find explanations, but wrong explanations, or the substitution of words, while they may be satisfactory to the questioner, are often worse in their effects than no explanation at all. He gives as examples of these tendencies the uric acid theory, the term "selective action"—so often used but which means so little—and the tendency to overwork certain theories that have a temporary vogue. Thus he thinks that, while we may not have considered the condition of the heart muscle sufficiently in the past, we are at present in danger of believing disease of the cardiac muscle to be present where it does not exist. The orthodiagraph will, he thinks, teach us that we have frequently been in error when we thought the heart altered in size, just as the clinical use of the manometer has taught us the inaccuracy of the estimation of arterial tension by the finger. While we may make a diagnosis, he insists, of a disease of which we do not know the cause, we should not make a diagnosis implying a cause unless we have grounds from experience for prophesying what will be found at a postmortem examination made with all modern aids of histology, bacteriology and chemistry if the patient died then and there.

We also err because we make excursions too often into sciences in which our training is inadequate, and he instances here the science of statistics and its misapplication in estimating the value of surgical and other methods, etc. Even life insurance statistics compiled by actuaries are not always free from fallacies, and White refers to many of the papers written on the sub-

ject of the inheritance of tuberculosis as specially good illustrations of the extreme difficulty of medical statistical problems and the errors in their treatment. During the past few years the opinion has been commonly expressed that tuberculosis is not hereditary and that the children of tuberculous parents are in no greater danger than those of others. Professor Karl Pearson has recently published a paper in which he states that the inheritance of a special liability to tuberculous infection plays a very important part. White's plea is that medical men should not draw conclusions from statistics requiring a special training in figures unless they can obtain the help of those who have that special training.

Another hindrance to the advance of medical knowledge which he points out is the unreflecting adhesion to authority. He would say to all but the youngest students: "Accept nothing on authority, but look for yourselves and see if the usual teaching is true; believe nothing you do not see; be skeptical about everything you are told." This may seem like extreme advice, but it is to be remembered that it is addressed to investigators and applies to their own field of research. We all realize that, until we are competent to enter a certain field—say, for example, astronomy or Egyptology—and dig out facts for ourselves, we must, at least tentatively, accept the conclusions of those who by toilsome research have earned the right to speak with authority. But in one's own field the tendency to implicit and lazy following of authority is perhaps the greatest menace to medical progress. Mr. White's call for a healthy skepticism is timely and wholesome.

THE PATHOGENESIS OF DIABETES INSIPIDUS.

This condition has, in common with diabetes, only the polyuria, and, although cases have been observed in which, after a time, glycosuria developed, yet with most of the typical cases the name diabetes insipidus is a misleading misnomer. At one time the view was advanced that the polyuria is secondary to a chronic polydipsia, and cases have been reported in which this condition seems to have existed, but these cases are of an atypical, transient form, dependent on neuroses, and quite distinct from the typical persistent form of the disease. Strubell found that in the typical cases a rise in the concentration of the blood soon follows a brief period of thirst, showing that the excessive renal secretion is not dependent on an excessive amount of liquid in the blood, as is the case in polyuria resulting from polydipsia. This and other observations have led to the view now prevailing that diabetes insipidus depends on a functional abnormality in the kidneys, which is not the sequel of any evident structural alteration, but rather depends on some change in either the vascular or nervous mechanism of the kidney. In many instances there is definite evidence of nervous involvement, as in two cases studied by Seiler in which the disease followed fracture of the base of the skull, and it may be recalled that Claude Bernard, in his classical experiments on experimental glycosuria, found that lesions of the medulla might be followed by polyuria without glycosuria. There are many cases, however, in which no central nervous lesions can be demonstrated, and some in which hereditary influences bear a part.

According to many observers, the increased flow of urine depends ultimately on a dilatation of the renal vessels, unaccompanied by general rise in arterial pressure; presumably this vasodilatation is the result of the primary nervous lesions, for a similar condition of polyuria is said to be produced in animals by cutting the renal nerves. R. Schmidt[1] believes it possible to modify the course of the disease by reducing this renal hyperemia through artificial hyperemia of other vascular regions; e. g., catharsis in cases with obstipation, and external heat or diaphoretics in patients with dry skins. Spaether[2] also considers diabetes insipidus to be the result of a paresis of the renal vasomotor nerves, of either central or peripheral origin; and he explains the favorable results which sometimes follow the method of treatment by strychnin injections advocated by Feilchenfeld, as due to stimulation of this nerve plexus.

Studies of the conditions of metabolism in this disease seem to prove that it is not the cause or the result of metabolic disturbances, but apparently depends exclusively on secretory abnormalities. Tallqvist[3] made the interesting observation that variations in the amount of nitrogenous food cause a corresponding variation in the amount of urinary secretion, so that the proportion of urea in the urine remains practically constant; the same change followed variations in the amount of sodium chlorid in the food. A. Wolf found that the reverse is also true, namely, a reduction in the quantity of the urinary secretion by any means leads to an equal reduction in the amount of urea excreted, the proportion remaining constant. These results are confirmed in a careful study from Sahli's clinic by F. Seiler,[4] who found that ingestion of large quantities of nitrogenous food is not followed by a rise in the specific gravity of the urine, as is the case with normal individuals. Apparently in diabetes insipidus the kidneys can not excrete urine containing nearly so large a proportion of solids as normal urine; therefore, the total excretion of solids can reach the normal only when a sufficiently large quantity of water reaches the kidneys to carry out all the accumulating solids of the blood. Should there not be sufficient water to accomplish this, the concentration of solids in the blood will increase, leading to the sensation of thirst which causes the characteristic polydipsia and polyuria of the disease. Seiler suggests that the polyuria of chronic interstitial nephritis similarly may depend on the sensation of thirst produced by increase in the concentration of the blood due to retained solids. In diabetes insipidus, however, uremia does not

1. Wien. klin. Wochschr., 1905, xviii, p. 1112.
2. Berl. klin. Wochschr., 1906, No. 30.
3. Zeit. f. klin. Med., 1903, xlix, p. 181.
4. Zeit. f. klin. Med., 1907, lxi, p. 1.

follow, because there are no renal lesions to prevent the polyuria being sufficient to remove all excess urinary solids from the blood. Just why the kidney is unable to secrete a normally concentrated urine in diabetes insipidus Seiler does not attempt to explain, beyond ascribing it to nervous defects. He does not believe the view held by Tallqvist, that there is a failure of resorption of water from the tubules, can be the correct explanation.

As to therapeutics, Seiler believes that the practice of restricting the amount of fluid taken by the patient should not be carried too far, as retention of solids will result with all its evil effects. The mere reduction in quantity of urine is not a desirable result when there is not a corresponding increase in specific gravity, for otherwise retention of solids must be taking place. In some mild cases, in which the primary nervous disorder is either transitory or purely functional, reduction in the amount of fluid ingested, together with such nervous stimulants as strychnin, or vasoconstrictors, such as ergot, may lead to improvement or recovery; but it is imperative that the amount of urinary solids must remain normal as the polyuria decreases. Attempts made by Seiler to improve the function of the kidney by diuretics did not give favorable results.

THE RELATIVE PREVALENCE OF DISEASE AMONG WHITE AND COLORED TROOPS.

In view of the questioned expediency of retaining in service colored troops, in opposition to the sentiment in so many localities against having them in the local garrison, it becomes interesting to compare the relative efficiency of the white and colored troops as affected by disease. For troops serving in the United States proper, a study of the statistics for many years shows that the colored troops almost uniformly have a much lower admission, discharge and non-effective rate for disease, while their death rate is much higher than that of the whites, usually more than twice as great. Suicide is also very much more common among white troops, but, on the other hand, homicide is not nearly so frequent. As causes of non-effectiveness the diseases which are of more importance among white troops are alcoholism and venereal diseases, typhoid fever, malaria, diarrhea, dysentery and catarrhal diseases of the respiratory system. But colored troops are greater sufferers from rheumatism in all its forms, tuberculosis, pneumonia, hemorrhoids and other diseases of the circulatory system, frostbite and freezing. The death rate from tuberculosis, pneumonia and aneurism is many times greater among the colored troops than among the whites. The colored troops appear to be particularly well adapted to service in the tropics; though their admission rate here is a little larger than for white troops, all other rates are lower. The death rate, which in the United States is twice as great as that of the whites, in the tropics is considerably less than that of the latter. The rates for the special tropical diseases, such as dysentery and malaria, are considerably lower in the colored race.

STERILITY AMONG *X*-RAY WORKERS.

The dangers attending the continuous use of the *x*-ray, and especially the dangers which menace the operator, are not yet fully appreciated. Jordan[1] claims that any man who works daily with the ray for a year or two, even if he takes reasonable care, becomes sterile. By reasonable care this observer means the keeping of the *x*-ray apparatus in a protected box, the use of a protective shield for the tube, the wearing by the operator of a protective apron, and keeping at a distance of several yards from the direct ray. This being the case, it seems certain that the ordinary operator of the *x*-ray in this country has been protected in a very inadequate manner. So far as we know, statistics regarding the sterility of *x*-ray workers have not been collected. It would be of interest to gather such figures, and it would also be of interest to determine whether operators who give up the *x*-ray work recover from their sterility. This is a point which has never been settled. In the meantime every *x*-ray worker, even the practitioner who occasionally uses the *x*-ray for diagnostic or therapeutic purposes, should bear this danger in mind and take protective steps. The protection of the tube so far as is possible, the use of a strongly protective apron, and the interposition between the operator and the ray of screens guarded by heavy sheet lead should be carried out in every instance.

RENAL CALCULUS AFTER TYPHOID FEVER.

The relation between biliary calculi and bacteria is now firmly established and has gained a strong hold on the minds of the profession in general. The frequency with which typhoid fever is found to have preceded gallstone formation is also clear, and the isolation of *Bacillus typhosus* from the bile of patients with cholelithiasis is common. The origin of renal calculi is not at present so satisfactorily explained, though for some time there have been observers who have claimed that these also are of bacterial origin. There is some evidence that this may be the case. Graves[2] has recently recorded the history of a patient who, six years after an attack of typhoid fever, had symptoms of stone in the left kidney. Operation showed a phosphatic calculus in the ureter, and the *Bacillus typhosus* was obtained from the kidney pelvis in pure culture. The patient had had no renal symptoms whatever before his attack of typhoid fever. Such a case as this certainly suggests a connection between typhoid fever and renal calculi, but it is not wise to generalize from a single case. Observations along this line must be repeated, for, when we consider the frequency with which the *Bacillus typhosus* is excreted through the kidneys, it would seem strange, if it is the cause of kidney stones, that these do not occur more frequently after typhoid fever. It may be that in the kidney, as in the gall bladder, it is not the sole cause, but one of several causes, and that besides its presence there must be some predisposing factor, perhaps partial stagnation of urine in the pelvis of the kidney.

1. Brit. Med. Jour., July 6, 1907.
2. Brit. Med. Jour., July 13, 1907.

Medical News

ALASKA.

Smallpox Epidemic.—Passed Assistant Surgeon Hobdy, U. S. P. H. and M.-H. Service in charge of Angel Island Quarantine, Cal., reports an epidemic of smallpox at St. Michael's, and in other places along the coast of Alaska. He has issued orders to the boarding officers to inspect vessels from all ports in Alaska.

COLORADO.

Pardoned.—The State Board of Pardons has commuted the sentence of Dr. Carrie L. Johnson, Pueblo, who has been serving an indeterminate sentence on account of malpractice.

June Deaths.—During June 851 deaths were reported, equivalent to an annual death rate per 1,000 of 16.68. There were 26 deaths from scarlet fever; 11 from typhoid fever, and 6 from diphtheria during the last month.

Mennonite Sanitarium.—The Mennonite Sanitarium Association has commenced the construction of a large sanitarium for tuberculosis on its farm, four miles west of La Junta, to contain 40 rooms and to cost about $50,000.

Infectious Diseases.—During June there were reported to the State Board of Health 325 cases of scarlet fever; 116 cases of smallpox; 64 cases of typhoid fever, and 11 of diphtheria. As compared with the previous month, June shows a decrease of 24 cases of diphtheria; 105 cases of scarlet fever, and 42 cases of smallpox, and an increase of 38 cases of typhoid fever. ——There are said to be 75 cases of typhoid fever in La Junta.

Exonerate Physicians.—The Larimer County Medical Association at a meeting held July 4 to investigate a rumor concerning a criminal operation in Fort Collins, has authorized the following statement:

> The Larimer County Medical Society, after a full and careful examination of all witnesses and a thorough investigation of all the facts about the case reported in the local papers, has found that no physician of Fort Collins was guilty of any criminal action in connection with the case, and in the opinion of the society each and all are hereby absolved from any blame whatsoever. Issued by order of the society. E. STUVER, Secretary.

DISTRICT OF COLUMBIA.

Personal.—Dr. J. Russell Verbrycke has resigned as interne at Garfield Hospital and has accepted a position as resident physician at Mount Sinai Hospital, New York City.——Dr. Murray G. Motter has resigned as chief inspector and deputy health officer of the district, and sailed from New York for Europe, July 20.——Dr. Joseph D. Rogers has been appointed substitute physician to the poor of the district, vice Dr. Richard S. Blackburn.

ILLINOIS.

Many Insane Before the Courts.—The county physician of Cook County states that the insane court passed on 180 patients during July, the largest number on record.

Physician Acquitted.—Dr. Robert Emery, Peoria, indicted for murder in the case of the death of Pauline Schneider, who is said to have died after a criminal operation, was acquitted by the jury, July 9.

Smallpox.—A number of cases of smallpox have occurred at Mechanicsburg since the first of July, and an inspector of the State Board of Health has gone to the village to confer with the local authorities regarding quarantine.——The secretary of the State Board of Health has issued a circular letter regarding the continued spread of smallpox throughout the state, and with it has sent a poster urging the importance of vaccination as a preventive of the disease.

Insane in State Hospitals.—The first step toward removing the insane from county almshouses by redistricting the state into six districts has been taken. The institution at Bartonville has been changed from a hospital for the incurably insane to a district hospital, thus giving a new district. After September 2 new cases will be sent to the hospital for the district in which the patient resides. By this ruling the State Board of Charities hopes to avoid peril, confusion and expense.

Personal.—Dr. John R. Trott, Virden, has retired from active practice.——Dr. Levi W. Carter, Peoria, who has been ill for several months, has been taken to the Proctor Home.——Dr. Fred S. O'Hara, Springfield, has been elected state president of the Order of Eagles.——Dr. Clarence R. Bell, Thayer, has been appointed physician at the Government Insane Asylum, Washington.——Dr. J. F. Duane, Peoria, has returned from Europe.——Dr. Stephen C. Glidden, Danville, has been appointed chief surgeon of the hospital system of the Illinois Traction System.——Dr. Walter W. Greaves, La Salle, who was operated on for appendicitis at St. Mary's Hospital, July 26, is reported to be convalescent.——Dr. Nicholas Senn, who left Chicago July 6, is making a tour of circumnavigation of South America and will return early in October.

Civil Service Medical Positions.—The secretary of the Illinois Civil Service Commission announces that the following individuals have passed the examination recently conducted by the commission, and are eligible for appointment: Dr. Henry W. Miller, Dunning, director of State Psychopathic Institute; assistant physicians, Drs. Fred B. Clarke, Elgin; Emil Z. Levithin, Chicago; Harriet Hook, Lincoln; E. Louis Abbott, Anna; Richard F. Windsor, Hospital; Angelina G. Hamilton, Ann Arbor, Mich.; Rachel A. Watkins, Peoria; Edward A. Foley, Woodstock, and Cyrus H. Anderson, McLeansboro; and first assistant physicians, Drs. Robert B. Hough, Lincoln, and Eugene Cohn, Hospital.

Chicago.

Physician Found Guilty.—Dr. Adolph Buettner is said to have been found guilty of manslaughter August 2, in connection with a criminal operation. The jury included a plea for leniency in its verdict.

Surgeons in Charge of Ambulances.—The chief of police has issued the following order: "Hereafter the following will comprise the detail on police ambulances for each shift: One policeman, one driver and a surgeon, who will be in charge."

Henrotin Memorial Hospital.—The Fernand Henrotin Memorial Hospital is so near completion that the faculty and directors have made a formal inspection of it and are laying plans for the opening. The formal opening will occur late this month or early in September.

New Hospital.—Dr. Alexander A. Whamond and other West Side physicians have purchased the property formerly occupied by the Finsen Light Institute and have equipped the building as a general hospital. It was formally opened by a reception July 15, and was named the Robert Burns Hospital.

July Mortality.—During July 2,217 deaths were reported, equivalent to an annual death rate of 12.39 per 1,000. The deaths numbered 138 fewer than for the previous month and 96 fewer than for the corresponding month of 1906. Chief among the causes of death were: Acute intestinal diseases, with 269; consumption, with 256; pneumonia, and violence, including suicide, each with 196; heart diseases, with 157; nephritis, with 139, and cancer, with 105.

Sanitary Bulletin.—On August 3 the first issue of the *Bulletin of the Chicago School of Sanitary Instruction*, devoted to the dissemination of advice and information of the department of health was issued. The publication is to be weekly and will include the weekly bulletin heretofore issued by the department of health. In addition, the first issue discusses the milk supply of Chicago and quotes at length from a recent paper on the freedom of Chicago-born individuals from cancer.

Deaths of the Week.—During the week ended August 3, 503 deaths were reported, 45 fewer than for the preceding week and 2 more than for the corresponding week of 1906, equivalent to an annual death rate per 1,000 of 12.44. Acute intestinal diseases caused 120 deaths; consumption, 47; violence (including suicide), 42; heart diseases, 37; nephritis, 34, and pneumonia and nervous diseases, each 31. During the week 7 deaths each were reported from scarlet fever and whooping-cough; 5 from typhoid fever; 4 from measles; 2 from tetanus and one from sunstroke.

Tenement Tent Centers.—The Chicago Relief and Aid Society has begun the work of establishing tent centers in the congested districts of the city, where children may play without danger of being overcome by the heat. One of these tent villages is in the yard of the Henry Booth house, one at the University of Chicago Settlement, and the third at the Northwestern University Settlement. Each day volunteer physicians talk to the mothers on the proper care of children during the hot weather. The following physicians are in charge of the tents: Drs. Frances M. Allen, Julia D. Merrill, William J. Butler, John C. West, James W. Van Derslice, May Michael, Frank W. Allin, Thomas G. Allen and Grace F. Hagans.

Increase in Deaths.—During the first seven months of 1907 1,838 more deaths were reported than for the corresponding period of 1906. This represents an increase of 13.6 per cent. in the annual mortality ratio. The causes of death showing important increase are: Whooping-cough, 170 per cent.; measles, 124 per cent.; scarlet fever, 60.2 per cent.; pneumonia, 32.1 per cent.; heart diseases, 24.3 per cent.; bronchitis, 22.7 per cent.; diphtheria, 16 per cent.; tuberculosis, 14.4 per cent.; nervous diseases, 14.4 per cent.; suicide, 14.2 per cent., and nephritis, 9.8 per cent. Of the deaths reported during this

period 11,090 were of male and 9,698 of female, an excess of 29.2 per cent. of male and 28.4 per cent. female, over the average excess of the previous two decades.

MARYLAND.

Herter Lecturer Chosen.—Edward A. Schaefer, LL.D., Sc.D., F.R.S., professor of physiology in the University of Edinburgh, Scotland, has been selected as the Herter lecturer for 1903.

Bequests.—By the will of the late Reverdy Johnson, the Union Protestant Infirmary, Baltimore, received $5,000 and Johns Hopkins Hospital $10,000, with an additional reversion of $15,000.

Hospital Notes.—An extensive addition to the Shepherd and Enoch Pratt Hospital, Baltimore, is being constructed which will contain dining rooms, kitchens, storerooms, nurses' quarters and apartments for servants. This addition will be connected with the present hospital by a glass-covered corridor, which will also be used as sun parlors.——The new nurses' home at the Johns Hopkins Hospital has been completed at a cost of about $10,000.

Personal.—Dr. H. K. Beall, Baltimore, underwent an operation at Johns Hopkins Hospital, July 29.——Dr. F. S. Goodman, U. S. P. H. and M.-H. Service, Baltimore, has recovered from his recent illness and will go to Blue Ridge Mountains to recuperate.——Drs. William S. Baer, Charles C. McDowell, Elizabeth Hurdon and E. E. Langley, Baltimore, are spending the summer in Europe.——Dr. Richard L. McNeer has resigned from the faculty of the Maryland Medical College to become professor of surgical anatomy and associate professor of surgery in the College of Physicians and Surgeons, Baltimore.

MASSACHUSETTS. ..

Appeal for Consumptives.—The Boston Association for the Relief and Control of Tuberculosis has made an appeal for $5,000 to support the day camp at Mattapan until November 1.

Smallpox in Lawrence.—During the last four months 113 cases of smallpox have occurred in Lawrence. The last patient has just been discharged from the Isolation Hospital. The epidemic was attended by no fatalities.

Students Go to Labrador.—Four students of Harvard, three of whom are from the medical school, have sailed from West Lynn to Labrador, to assist Dr. Wilfred T. Grenfell during the summer in his hospital and industrial work on that coast.

Personal.—Dr. Adam S. McKnight, Fall River, has been appointed secretary to the board of district inspectors recently appointed to enforce the new ventilation law in factories, and health measures generally.——Dr. J. Teuchter, Boston, has gone to Vienna.——Dr. Malcolm Storer, Boston, has been elected president of the New England Convalescent Rest Home Association.

Boards of Health Meet.—At the quarterly meeting of the Massachusetts Association of Boards of Health, held at Gallup's Island, Boston Harbor, July 25, Henry P. Walcott, president of the board, spoke on "Recent Public Health Legislation," outlining the new law dividing the state into districts, and Dr. Frank G. Wheatley, North Abington, senator from Plymouth County, spoke on health legislation, giving a résumé of the numerous bills relating to public health, and stating that those killed were as valuable as those enacted.

MICHIGAN.

Unlicensed Practitioner Fined.—J. F. Bosworth, an itinerant practitioner, arrested at Battle Creek, at the instance of the Calhoun County Medical Society, is said to have pleaded guilty July 30 and to have been fined $100.

Enjoined from Practicing.—Dr. David G. Austin, Laingsburg, who, it is claimed, sold his practice to Dr. George Robb, Flushing, and agreed not to practice in Laingsburg, has been enjoined from practicing in that place on complaint of Dr. Robb.

Personal.—Dr. Frank W. Shumway, Lansing, secretary of the State Board of Health, has been instructed to make an official investigation of the camp of the Michigan National Guard at Ludington.——Dr. Harley O. Haynes, for five years physician at the State Reformatory, Ionia, has resigned to become assistant physician at the Michigan Home for the Feeble Minded and Epileptic, Lapeer. Dr. W. T. Woodbury, Detroit, has been appointed to fill the vacancy at Ionia.——Dr. Charles W. Niles, Calumet, has resigned as a member of the staff of the Calumet and Hecla Hospital.——Dr Walter H. Sawyer, Hillsdale, has been appointed a member of the board of regents of the University of Michigan.——Dr. Moses A. Fechheimer, Detroit, who has been studying abroad since last October, sailed for this country July 26.——Dr. Charles B. MacCartney and E. R. Johnston, of the staff of the Oak Grove Hospital, Flint, resigned August 1, to pursue medical studies abroad.——Dr. Frank N. Martin, St. Joseph, has gone abroad to study in Edinburgh and Vienna.

MISSOURI.

Typhoid Fever.—It is reported that Springfield has 50 cases of typhoid fever, due to impure milk and water supplies.

Smallpox.—The secretary of the Jackson County board of health reports 17 cases of smallpox in one neighborhood at Sni Mills, in the eastern part of the county.——Dr. J. L. Downing, Eagleville, is reported to be ill with smallpox.

Physician Paroled.—Dr. John S. Davies, St. Louis, said to have been sentenced to serve a five-year term in the state penitentiary on the charge of performing an illegal operation, has been pardoned, it is said, by Judge Sadler, on the ground that the enforcement of this sentence would work hardship to the doctor's family.

Personal.—Dr. John C. Lebrecht, St. Louis, is reported to be seriously ill as the result of internal and spinal injuries sustained from a fall June 23.——Dr. J. Frank Harrison of State Hospital for the Insane No. 1, Fulton, has been selected as superintendent of the Farmington Hospital.——Dr. Paul F. Vasterling, St. Louis, has been appointed assistant chief surgeon of the Missouri Pacific System.

Licenses Revoked.—At a meeting of the State Board of Health, July 13, in Kansas City, evidence was heard against Drs. O. A. Johnson and William O. Bye, charged with "unprofessional and dishonorable conduct by advertising in a way that is unprofessional, dishonorable, misleading and calculated to deceive the public." The charges were sustained and the licenses revoked. Both of the defendants have since appealed from the decision of the board of the Jackson County Circuit Court. (See Miscellany Department, this issue.)

NEW JERSEY.

Cocain Sellers Arrested.—The sheriff of Essex County and the police of Newark made more than 100 arrests of alleged cocain vendors during July.

Tuberculosis Home Planned.—The board of health of New Brunswick is making plans for the erection of a tuberculosis hospital at the Poor Farm, where patients afflicted with the disease may be cared for.

Typhoid in State Hospital.—There have been 82 cases of typhoid fever, with 12 deaths, at the State Hospital for the Insane, Trenton, and the Trenton board of health has informed the managers of the institution that unless the insanitary conditions which prevail there were remedied, legal proceedings would be begun. It is reported that at present the sanitary condition of the institution is excellent.

Personal.—Drs. Frank P. McKinstry, Charles M. Williams and Frederick J. LaRiew have been appointed members of the Washington board of health. At a meeting of the board for organization Dr. Williams was re-elected president.——Drs. Alfred A. Loeb and George W. Corrigan, Newark, have established a private ambulance service.——Dr. Peter P. Rafferty, Red Bank, has been appointed superintendent of the State Hospital for the Insane, Trenton, vice Dr. John W. Ward.

NEW MEXICO.

Typhoid Fever.—It is reported that there are 150 cases of typhoid in Albuquerque and that the disease is spreading rapidly.

New Prison Physician.—Dr. David Knapp, who was physician at the territorial prison during the administration of Governor Otero, has received a second appointment to that position, succeeding Dr. James A. Massie.

New Practitioners.—At the July meeting of the State Board of Health 32 physicians were admitted to practice in the territory on the presentation of diplomas and other credentials or on passing the required examination. Three of the applicants gave Santa Fé as their address.

Hospital Notes.—A contract has been awarded for the addition to the Miners' Hospital, Raton, at an expense of about $5,000. The addition will include an operating ward and the completion of the third story of the building.——The managers of the New Mexico Cottage Sanatorium, Silver City, have received from Mr. Frank Thompson the gift of a new building for the use of febrile patients.

NEW YORK.

Meeting of Medical Examiners.—The State Board of Medical Examiners met in Albany Thursday to adopt rules and regu-

lations. The secretary of the board, Dr. Maurice J. Lewi, was empowered to take proper steps against W. W. Turver, Buffalo, for revocation of his license. Turver is serving a sentence in Auburn prison for performing an abortion.

Adulterated Milk.—Charles A. Wieting, commissioner of the State Department of Agriculture, in a recent report, states that in spite of many arrests made by the government inspectors, violations of that section of the agricultural law are increasing. The method of adulteration in vogue consists in putting about 36 quarts of milk or a little less, into 40-quart cans. Then other milk, from which the cream has been extracted, is taken to fill up these cans, and this is sent to New York for sale as whole or pure milk. It is very difficult to detect this form of adulteration. In this state there are 591 milk gathering stations that purchase milk from the producers, to reship to the city for consumption.

Personal.—Morris M. Wall has succeeded Dr. Charles F. Howard as one of the managers of the Buffalo Reformatory.——Dr. Thomas Lewis, a recent graduate of the College of Medicine of Syracuse University, has returned to his home in Liberia, West Africa.——Drs. John F. McEncroe and John A. Heatly have resigned from the medical staff of Ellis Hospital, Schenectady. Drs. Frederick C. Reed and Walter L. Huggins have been appointed members of the surgical staff, and Dr. John L. Schooleraft has been made consulting physician and surgeon to the institution.——Dr. W. W. Waite has been appointed city bacteriologist of Syracuse, vice Dr. William H. May, deceased.——Dr. William C. Gilley, New York, sailed for Glasgow, August 3.——Dr. E. Franklin Smith, New York, has been appointed surgeon to the Union Construction and Waterproofing Company.

New York City.

Hospital Robbed.—About $1,000 worth of jewelry and $190 in coin were stolen from the safe in Flower Hospital by one of the clerks.

Smallpox on Ocean Liner.—On account of one case of smallpox on the North German Lloyd liner *Koenigen Luise*, the surgeon vaccinated all on board, 1,371 in number, and as a result no one was detained at quarantine.

After Cocain Vendors.—The health department is determined to continue its crusade against the sale of cocain and all preparations containing cocain, without a physician's prescription. Since the passage of the ordinance more than 20 druggists have been arrested on the charge of selling cocain illegally.

No Special Diet for Consumptives.—Because of lack of funds the health department can no longer supply free milk and eggs as a special diet for the tuberculous. During 1906 more than 22,000 quarts of milk and 44,500 eggs were furnished in Manhattan alone. Altogether 50,000 quarts of milk and nearly 100,000 eggs have been given away.

No More Hospital Grafting.—Dr. S. T. Armstrong, general medical superintendent to Bellevue and Allied Hospitals, learning that visiting physicians were sending to the hospitals patients who were able to pay, has issued on order that any patient who has more than $50 value in his possession when taken to hospitals may be charged $1.50 a day for treatment.

Fighting Mosquitoes.—Fort Totten, Bayside and Hollis, L. I., have been fighting mosquitoes in their own crude way all summer and now ask the city to aid them.——Mosquitoes in Queens are to be attacked next summer, possibly this summer.——The steamboat *Governor Flower* of the quarantine fleet has been cruising through Hell Gate looking for mosquito incubators.

Eddyite Found Guilty.—The Court of Special Sessions found Clarence W. Byrne, an Eddyite, guilty of violating the penal code by having wilfully neglected to provide medical attendance for his 6-year-old daughter, who died of pneumonia, with no other attendance than that provided by an Eddyist practitioner. The sentence was thirty days in the penitentiary.

Floating Camps for Consumptives.—The Charity Organization Society is making use of old ferryboats as floating camps for those ill with tuberculosis. The *Southfield* has been placed in commission at the foot of West Sixteenth Street, North River, and has accommodation for 60 or more patients, a trained nurse is in charge, and a regular staff of visiting physicians. The society has issued an appeal for $3,000 to continue the advantages of the fresh air, food and nursing provided.

Contagious Diseases.—There were reported to the sanitary bureau for the wek ending July 27, 401 cases of measles, with 24 deaths; 346 cases of tuberculosis, with 143 deaths; 278 cases of diphtheria, with 30 deaths; 180 cases of scarlet fever, with 14 deaths; 81 cases of typhoid, with 14 deaths; 47 cases of whooping-cough, with 10 deaths; 20 cases of cerebrospinal meningitis, with 8 deaths; one case of smallpox, with one death, and 20 cases of varicella, a total of 1,374 cases and 244 deaths.

For Garbage Incineration.—Dr. Alvah H. Doty, health officer of the port, states that the present method of garbage disposal requiring the separation of garbage from other refuse, is impracticable and can not be enforced. Practical sanitarians are unanimous in the opinion that a city's garbage and other waste should be collected and cremated. That this can be done has been practically demonstrated both in Europe and this country. It is declared that New York has exceedingly insanitary and impracticable methods of disposal of garbage and other refuse, and that there is no reasonable excuse for its existence. Josiah C. Pumpelly, president of the City Improvement Society, asks why the mayor does not fulfill his promise, made in 1906, and appoint a commission of experts to examine into this matter, and report at an early date, that our city officials may be prepared to act wisely in the premises.

OREGON.

Personal.—Dr. William K. Haviland has been elected mayor of Estacada.——Dr. Andrew C. Panton, Portland, chief surgeon for the Portland Light and Power Company, and a member of the State Board of Medical Examiners, was found guilty of a technical assault on an employé of an itinerant practitioner, against whom a charge of unprofessional conduct had been made, and fined $15.

State Society Election.—At the thirty-third annual meeting of the Oregon State Medical Association, held at Seaside, the following officers were elected: President, Dr. Robert C. Coffey, Portland; vice-president, Dr. John H. Rosénberg, Prineeville; secretary, Dr. William House, Mount Tabor; delegate to the American Medical Association, Dr. Andrew C. Smith, Portland, and alternate, Dr. Walter T. Williamson, Portland.

Hospital Notes.—An emergency hospital is to be equipped at the Union depot, Portland, by the Northern Pacific Terminal Company.——Sister Mary Theresa of the Benedictine order has purchased the home of Dr. D. A. McIntyre, at Oak Grove, between Portland and Oregon City, and will found a sanatorium and hospital for children at a cost of about $50,000.——Drs. Walter Culin and Richmond, Coquille, have purchased the Academy Building in that city, and will remodel and fit it up as a hospital.——The Chemawa Indian School is building a new hospital building at a cost of nearly $20,000, which, it is expected, will be ready by the opening of the fall term of the school.

PENNSYLVANIA.

Whooping-Cough Epidemic.—The health department of Pittsburg has ordered placarding of whooping-cough, as there are 400 cases of the disease in the city, and about 25 new cases are being reported daily. The health bureau intends to enforce strict quarantine on all infected houses.

Personal.—Dr. Lawton M. Hartman, Jr., York, has returned from Europe.——Dr. James Evelyn Pilcher, Carlisle, has been elected censor for the second district, and Dr. Americus R. Allen, Carlisle, delegate to the state society.——Dr. Frederick C. Johnson, Wilkes-Barre, who has been seriously ill with appendicitis at the Harrisburg Hospital, is reported convalescent.

Hospital Opened.—The new Sewickley Hospital, erected at a cost of $60,000, was dedicated with impressive ceremonies July 20. The following compose the hospital staff: Drs. R. McCready, James M. McCready, Frank L. McCready, Robert J. Murray, Robert S. Macrum, Dewitt B. Nettleton, John Walters, Fletcher K. White, Thomas H. Grimes, Samuel Jennings, R. N. Dickson, J. R. McQuaid, R. R. Hill, R. W. Lyons and Joseph R. Hood.

Report on State Antitoxin.—The State Department of Health reports that during the first six months of 1907 the death rate from diphtheria among persons treated with state antitoxin was only 8 per cent., as compared with 11 per cent. for the first six months of 1906. Of the 1,712 cases treated, 1,560 of the patients were restored to health and strength. During the same period 1,073 individuals were treated with immunizing doses, and of this number only 18 contracted the disease.

Philadelphia.

Hospital Report.—The report of the Presbyterian Hospital for July shows that 186 patients were admitted to the institution during the month. There were 1,943 new patients

treated in the various dispensaries and 93 ambulance calls were made.

Personal.—Dr. J. Thompson Schell has resigned as clinical professor of pediatrics at Temple College and as pediatrician to the Samaritan and Garretson hospitals.——Dr. Paul J. Sartain sailed for Europe August 1.——Dr. Joseph Garzourka of Budapest, Hungary, is spending a few days in the city, on his tour of the world.

Health Report.—The total number of deaths reported for the week ended August 3 was 606. This is a decrease of 32 from the number reported in the preceding week and an increase of 95 over the number reported in the corresponding week of last year. The principal causes of death were: Typhoid fever, 9; pertussis, 9; diphtheria, 6; consumption, 59; cancer, 20; meningitis, 3; apoplexy, 21; tetanus, 2; heart disease, 42; acute respiratory disease, 22; enteritis, 153; appendicitis, 6; Bright's disease, 39; premature birth, 10; congenital debility, 28; suicide, 3; acidents, 17, and marasmus, 15. There were 118 cases of contagious diseases reported, with 13 deaths, as compared with 138 cases and 14 deaths in the previous week.

WASHINGTON.

Protest Against River Pollution.—At a meeting of the State Board of Health at North Yakima, the mayor of Prosser entered a protest against Naches City polluting the stream with sewage. The question was left to the state sanitary engineer, who was ordered to make a thorough investigation and report at the next meeting of the board in Seattle, August 3.

Personal.—Drs. Adelbert J. McIntyre and J. F. MacDonald have associated themselves with the Hoquiam General Hospital.——Dr. J. R. Prichard, Chewelah, has been appointed superintendent of the State Institution for the Feeble Minded, Medical Lake.——Dr. Martin L. Adams, Ballard, has filed application for his appointment as assistant health officer of greater Seattle.

Milk Commission Appointed.—The Seattle board of health has appointed a certified milk commission, consisting of Drs. Robert M. Stith, Philip V. Von Puhl, George B. McCullough, William G. Booth and Frank P. Gardner. The law provides for the appointment of a certified milk commission by the board of health. The members of the commission are to serve without remuneration, but are to receive their necessary traveling expenses. An inspection of the dairy and test of the products will be made by the commission on the application of a dairy to sell certified milk.

Defines Duties of Officers.—In an opinion rendered July 24 the attorney general gives the following decision regarding the duties of city and county health officers:

> It would appear that the city health officer has charge of the contagious and infectious diseases within the incorporated limits of cities referred to in the act which includes cities of the third class, subject to a general supervision of the county health officer, and that the county health officer has charge of the contagious and infectious diseases outside of incorporated cities, with general supervisory control over the whole county. The county bears the expense incurred outside of the city and the city those incurred in its behalf.

WISCONSIN.

Smallpox.—The health officer of Monroe announces that the smallpox outbreak at Winslow is now under control, and the eight individuals ill with the disease are under quarantine.

Personal.—Dr. Sherman E. Wright, Marinette, and family, left for Europe, August 1.——Dr. Edward L. Shepherd, Edgerton, submitted to a second operation, June 30.——Dr. and Mrs. Albert G. Jenner, Milwaukee, left for Europe July 29.——Dr. George W. Crosby, Sheboygan, suffered a slight cerebral hemorrhage, July 29.

Increase of Insane.—The report of the State Board of Health shows that the number of insane in state and county institutions has increased from 5,836 to 5,968 during the past year. About 60 per cent. of the insane are men and 40 per cent. women. The ratio of insanity is 1 to about 382 of the population of the state.

Medical Society Meetings.—The physicians of New London met July 29 to form a local organization. Dr. George T. Dawley was elected president; Dr. Henry L. Bacon, secretary, and Dr. August L. C. Borchardt, treasurer.——At the annual meeting of the Lincoln County Medical Association, held in Merrill, the following officers were elected: President, Dr. Michael Ravn, Merrill; vice-president, Dr. William E. Wray, Tomahawk; secretary, Dr. A. R. Wittman, Merrill; treasurer, Dr. Frank R. Winnemann, Merrill, and censors, Drs. E. K. Morris, Wilbert H. Monroe, Merrill, and John D. Cutler, Tomahawk.

GENERAL.

Hospital for Children in Honolulu.—Mr. A. S. Wilcox, Kauai, has given $50,000 for the establishment of a hospital for children at Honolulu.

Few Deaths from Smallpox.—The statistics for smallpox in the United States for the seven months ending in July show a total of 1,870 cases, with only four deaths.

Nurses for the Navy.—Surgeon General Rixey will ask congress at the next session to appropriate $45,000 wherewith to organize a corps of trained nurses for the navy.

American Public Health Association.—The thirty-fifth annual meeting of this association will be held at Atlantic City, Sept. 30 to Oct. 4, 1907. A section of vital statistics and a section of municipal health officers will be organized. Hence the meeting will be of especial interest to boards of health, federal state and municipal, on both executive and technical sides, and to all others engaged in sanitary work. Boards of health and other sanitary organizations are invited to send delegates to the meeting to discuss one or more of the various topics considered. The following subjects have been selected for discussion: Milk; laboratory findings in diphtheria; immigration in its relation to public health; nuisances which should be abated by boards of health; control of the so-called minor infectious diseases; vital statistics and the value thereof; construction and care of streets from a health standpoint; amendments to constitution and by-laws.

Health Report of the Philippines.—Dr. Heiser in his report for the first three months of 1907, states that the incidence of dangerous communicable diseases has been remarkably low for the quarter and that there is a favorable outlook for the entire year. The last case of plague occurred April 20, 1906. A few cases of cholera were reported from northern Samar, from Capiz, and from Occidental Negros. Repeated efforts were made to obtain specimens for laboratory diagnosis, but generally the patient had either died or recovered before a person competent to make a microscopic examination could reach the locality; this was due to the fact that usually only one case occurred in a locality and generally in some remote district. There has not been a single death from smallpox in the city of Manila during the entire year. Systematic vaccination has been practiced. In the provinces in which heretofore about 6,000 deaths have occurred annually from smallpox there has not been one death from this disease reported during the past year. There has been the most marked reduction in the mortality of the city of Manila. The solution of the leprosy problem has passed from the theoretical to the practical stage. Two years ago it was estimated that there were about 4,000 lepers in the islands. To-day the number has been reduced to 2,895, which shows that the policy of segregation is accomplishing the eradication of the disease much more rapidly even than was anticipated. The number of cases of dysentery among Americans is being steadily reduced as the rules of prophylaxis are better understood. There have been no epidemics of dysentery, typhoid or other dangerous communicable disease. Typhoid, the report states, seems to be gaining a firmer foothold in the Philippines than has hitherto been the case. As the changes which ordinarily accompany introduction of modern improvements are more and more introduced in the islands, it is becoming more apparent that this disease is affecting more persons. At present the construction of the new railroads is responsible for the gradual introduction of typhoid in many places at which it has not been encountered heretofore. Fortunately, so far, the disease has apparently been due to direct importation, cases having occurred among Americans and Japanese who have only recently come to the country, and either arrive in the incubation period, or have ingested infected foods obtained in the countries from which these new arrivals come. Filipinos seem to be the victims only in so far as they come in contact directly or indirectly with the former nationalities. It seems probable that the reasons why typhoid has not spread more heretofore in the Philippines are not so much because of the tropical climate, but because the ordinary vehicles by which the disease spreads have not been present. For instance, it is only a few years since milk of local production has been used to any extent in the islands; there were practically no general water distributing systems or reservoirs; in the absence of sewer systems it was practically impossible to infect places in which oysters and other shellfish grow and the comparative absence of flies during the greater portion of the year, are all explanations as to why there has not been a more general spread of the disease heretofore. The report goes on to state that restaurant and hotel keepers are required, for drinking and kitchen purposes, to use water which has been boiled or otherwise sterilized in a manner approved by the Board of Health. The work of in-

troducing artesian wells is being pushed forward rapidly, and many towns in the provinces are using artesian water exclusively.

FOREIGN.

New **Medical Society in Australia.**—A new society, called the Anatomical and Anthropological Society, was inaugurated in connection with the Medical Students' Society of Melbourne University, June 5.

Personal.—Prof. W. His, the son of the noted anatomist, has been chosen as the successor of Leyden. He is a former pupil of Curschmann, who has distinguished himself as a teacher by his clinical work at Basel and Göttingen, and is already the author of a number of important works.

Additions to London Hospitals.—On July 23 the new department for out-patients at St. Bartholomew's Hospital, London, was formally opened by the prince of Wales.——On July 24 Queen Alexandra opened the new buildings of the Hostel of St. Luke, established in 1892, for the medical and surgical treatment of the clergy of the Church of England, their wives and children.

Plague in Japan.—Passed Asistant Surgeon Cummings reports that the plague situation in Yokohama is becoming rather serious, not so much on account of the actual number of cases, but because of the number of foci scattered throughout the city and the number of infected rats found. The fear of spread to Tokyo is not unfounded, as one man sent from the poorhouse in Yokohama died of plague on the road to Tokyo.

Reception to Ramon y Cajal.—On June 30 a reception was given at the Royal Academy of Medicine, Madrid, in honor of Dr. Ramon y Cajal. The *Siglo Médico* states that, while the reception was given as a mark of esteem, it is a tardy recognition of his eminent ability as a neurologist, and that his work would have been made easier had recognition been given him earlier in life when he was struggling to obtain a foothold in the medical and scientific world.

Typhoid Fever in Scotland.—An epidemic of typhoid fever is reported at Peterhead, a town of about 15,000, in Aberdeenshire. The majority of the cases are of a mild type, and the death rate is a little over 5 per cent. The source of the outbreak has been traced to one of the reservoirs which supply the town with water. Like so many other towns on the north and northeast coasts of Scotland, Peterhead is inadequately supplied with water, and the inadequacy is exaggerated during the herring season, when the population is increased by from 3,000 to 5,000 inhabitants.

Medical Supervision of School Children in Africa.—The *South African Medical Record* states that medical supervision of school children is being brought before the public in the Transvaal. There exists in Johannesburg a committee composed of teachers, physicians and laymen, which has for its object the establishment of a system of medical inspection of schools. Some time ago this committee formulated a practical working scheme for the routine inspection of all children attending the government schools in the colony. The plan provides for the creation of a central school medical department, under the direction either of the department of education or that of public health; and the appointment of a staff of inspectors. The duties of these inspectors will include: The examination of all new pupils on admission, and re-examination of all children at stated intervals; routine biweekly visits to each school; reporting on sanitary conditions of schools; and instruction of teachers in principles of physiology, hygiene and temperance.

LONDON LETTER.

(From our Regular Correspondent.)

LONDON, July 27, 1907.

Women as Physicians; Professor Osler's Views.

In distributing the prizes at the London School of Medicine for Women, Professor Osler said that the profession of medicine, in spite of its difficulties and trials, is a satisfactory one for women, if they realize that it is not all roses and cream, and that they will not get a pecuniary return for everything they do. Four principal avenues are open to women. The first is in the scientific branches in bacteriology, histology, and many departments of pathology, where much of the best work is being done by women and which offers good careers. The second is in institutions, and he said that he would like to see one or two women physicians connected with every insane asylum. The most important avenue is general practice, but only those are fitted for it who among all the worries, anxieties, troubles and annoyances, can come up smiling every time. Women, of course, are specially fitted for dealing with diseases of women and children, but the chief trouble is that women—as a rule, men's women—do not believe much in women. When a paternal government institutes a proper system of school inspection an excellent field will be open to women. Lastly, there is the work in India and in the mission field. During the past year 18 of the students of the London School of Medicine for Women have passed the M.B. of the University of London—the highest degree obtainable in the United Kingdom; four have taken the M.D., and one the M.S. (the most severe examination possible in surgery). Others have succeeded at the universities of Durham and Ireland.

Educational Health and Food Campaign.

The Bread and Food Reform League has held a meeting at the Mansion House in order to spread information about health and, without advocating any special system of diet, to direct attention to healthy economical foods which are much neglected. The fact was pointed out that much of the underfeeding of the poor is due to ignorance as to the value of finely divided ground whole meal, oatmeal, etc., rather than to lack of means. This ignorance is held to be a cause of infantile mortality and physical degeneration. It was shown that a pound of protein could be obtained from peas for 14 cents and from oatmeal for 15 cents, while if derived from beef it cost 64 cents. The importance of eating whole meal bread instead of white bread was inculcated in consequence of the poverty of the latter in proteid and mineral constituents. A difficulty in the use of whole meal bread is the coarseness of the meal, which renders the bread indigestible by some persons. The league advocated, therefore, that whole meal should be ground very fine, thus containing all the nourishment of wheat in an easily digestible form, while for weak digestions the outermost skin of the bran should be removed.

VIENNA LETTER.

(From our Regular Correspondent.)

VIENNA, July 12, 1907.

Congress of Contract Physicians.

The Austrian "Verband der Aerzte der Krankenkassen" which recently met is an association comprising nearly all the practitioners appointed by the officially recognized "Kassen." The subjects discussed at the meeting were of interest to the profession generally. The law in Austria requires all wage-earners to become members of the "Krankenkassen" (sick club) of their district. This club not only provides for medical services, but also ensures the payment of a daily sum to the individual incapacitated for work by sickness, for a period not exceeding 200 days. The funds for the club are derived from deductions made from the salaries of the employés, to which sum the employer has to add a percentage. The burden on the employer is not a small one, and as the members of these clubs in Vienna alone number over 500,000, the sum contributed runs up into the millions. Still the remuneration of the physicians doing the work for these clubs is far from satisfactory. The sum of $400 a year is seldom paid, while the number of members in the district which pays this amount is seldom less than 1,000, and more often 1,500. The speakers at the congress were unanimously of the opinion that the conditions required changing, as both the club members and the physicians were dissatisfied. Overburdening the physician went hand in hand with less thorough treatment. At the present rate of payment a visit to a patient's house was less than 10 cents and an office visit brought 6 cents. The extension of the compulsory membership of clubs as contemplated by the government would be still more injurious to the medical profession, as the new law requires all people who are not in business for themselves and whose incomes are less than $1,000 a year, to become members of "sick clubs."

Health of Laborers in Austria.

The recent report of the Austrian department of commerce contains some interesting items regarding the health of the laboring classes. The best average health among the working classes was found in the city dweller and not in those living in the country. The iron workers were especially healthy, while masons, yarn spinners and wood workers showed the poorest health. The most prevalent disease was pulmonary tuberculosis; heart disease and granular kidney came next, while arthritis and bronchitis were very frequent. Accidents were comparatively few during 1906, only 16 per 1,000, of which only 7 per cent. were fatal. The electrical industries were the most dangerous to life, as 60 per cent. of all injuries were fatal. The chemical industries and iron and stone industries were about equally dangerous to health, but not to life. The fewest accidents, naturally, occurred among the female workers; the majority of such accidents in 1906 were in the celluloid trade, several explosions having occurred in celluloid factories.

Therapeutics

[It is the purpose of this department to outline an up-to-date management of disease, to suggest scientific treatment for diseased conditions, and to present prescriptions that are simple, useful and palatable. Prescriptions are written in both the metric and apothecaries' systems, but the amounts of the ingredients are NOT exact translations of one system into the other, but quantities convenient for pharmacist and physician. It should be understood that solids are weighed in grams or fractions of grams, while liquids are measured in cubic centimeters; that a teaspoon holds five cubic centimeters, i. e., more than a fluid dram, hence a 100 cubic centimeter preparation will contain twenty doses.]

Sending Tuberculosis Patients Away.

As THE JOURNAL has many times urged, and as the *Journal of the Outdoor Life*, July, 1907, well remarks, a word of warning to physicians is needed lest they send to distant climates helpless and penniless patients with tuberculosis, who, even at best, will not be able to earn their own support for months to come, and who, even if they are able to work, can find no employment at the places to which they are sent. Such errors in judgment are especially noticeable in New Mexico and Arizona, to which states pulmonary tuberculosis patients are now so frequently sent.

Local sanatoria should be developed in almost every region of this country. Statistical results are positively proving that tuberculosis can often be cured and frequently arrested in the region in which the case develops. Patients who can not be thus benefited will often not find improvement anywhere. Certain selected patients must still go to special climates to be permanently cured, but these are perhaps only 15 per cent. of the total, hence it is not justifiable to send a patient to a distant climate either to die or to be subjected to hardship, or to become a burden on another community. It is really an unjust dodging of a locality's own responsibilities.

Intermittent Fever.

If for any reason quinin can not be given in malarial fever, a number of other drugs may be used. The best substitute is arsenic. The dose must be large, and Fowler's solution should be the preparation used, and it should be pushed to the point of tolerance. Arsenic, however, for any length of time in large doses can do serious harm to the system.

℞.	c.c.	
Liquoris potassii arsenitis.....	25	fℨi

Sig.: Take five drops in water, three times a day, after meals, and rapidly increase to the point of tolerance. [If given by drops, begin with 5 and add one to each dose, viz., next dose 6 drops, next 7, next 8, and so on.]

The symptoms that show full physiologic action has been reached are pain in the epigastric region, nausea, perhaps vomiting, diarrhea, sore throat, red eyelids, puffing under the eyelids, especially in the morning, and perhaps a diminished amount of urine. If these symptoms occur the arsenic should be stopped and some iron preparation given, as:

℞.	c.c.	
Tincturæ ferri chloridi.....	10	fℨii
Syrupi acidi citrici.....	50	fℨiss
Aquæ ad	100	fℨiii

M. Sig.: A teaspoonful in water, three times a day, after meals.

The symptoms having subsided, as they will in two or three days, begin the Fowler's solution again at a little smaller dose than that which was last given when the symptoms appeared, and keep each dose the same, i. e., not increase. If symptoms of overaction again occur, stop again as before, but do not persist in giving arsenic very long after the chills have ceased.

A substitute for quinin now often advocated in malarial fever is methylene blue. It is said primarily to act on the protoplasm, while quinin acts on the chromatin of the plasmodium so that the young forms of malarial parasites are scarcely affected by methylene blue, while they are markedly acted on by quinin. In the late forms the reverse is true. Hence methylene blue is most valuable in chronic cases of malaria, in the same cases in which arsenic is of value. It should also be used when there is marked idiosyncrasy against quinin, and possibly when there is a tendency to hemoglobinuria. Certain it is that methylene blue is by no means as sure to eradicate the malarial plasmodia as is quinin. If one has the belief that quinin will cause a pregnant uterus to contract (but it is many times more likely that a severe malarial chill will produce abortion than that a large dose of quinin will) methylene blue can be substituted. Methylene blue is not methyl blue, which is practically what is sold under the trade name of "pyoktanin." Methylene blue sometimes causes dizziness, nausea and vomiting, and there may be vesical irritability, and even suppression of urine from its use. The urine is always colored green and sometimes bluish. The dose is 10 to 20 centigrams (1½ to 3 grains) every four hours, or 0.30 (5 grains) three times a day, after meals, in capsule or solution, with plenty of water. It is but slightly soluble in alcohol and will dissolve readily only to about 3 per cent. in water. Powdered nutmeg is often given with methylene blue (.10 to each .30) and is said to prevent the tendency to strangury.

℞.	gm.	
Methylthioninæ hydrochloridi	4	ℨi

Fac capsulas 20. Sig.: A capsule with a glass of hot water, every four hours (four times a day).

Gastrointestinal Disturbances in Children.

To prevent gastrointestinal upsets in children over 3 years of age parents should be taught the following:

1. Avoid overfeeding.
2. Allow no food between meals.
3. Insist on the food being eaten slowly and well chewed.
4. Meat, or at least some good proteid, should be given once a day.
5. Do not force feeding, even milk, if the appetite is absent.
6. If the child eats enough of other food, do not allow the use of milk as a drink instead of water with the meals. This does not conflict with the use of bread and milk as a meal, without other food.
7. Do not give a child too many kinds of food at any one meal.
8. Allow no tea, coffee, soda-fountain liquids, iced water, or any except the simplest of home, summer drinks.
9. If candy is allowed, none but the simplest, and that pure, and in very small quantity, directly after a meal.
10. Give no paregoric, morphin soothing-syrup, cholera drops, or any "patent medicine" to "check" a diarrhea.
11. If the stopping of all food and the administration of castor oil or some simple rhubarb or senna preparation does not stop the gostrointestinal upset, the family physician is needed.

Pneumonia in Infants and Young Children.

Dr. William P. Northrup (*New York Med. Jour.*, July 6, 1907), thus sums up the treatment of this disease in children:

I. HYGIENIC.

"Treat the patient as though he had an infectious fever. Avoid treating the patient according to the temperature alone," but take into consideration all the other symptoms. The room should be large, free from dust, sunny, and with plenty of fresh air, without drafts. There should be great care in the cleanliness of the little patient. The eyes, mouth, teeth, finger-nails, genitalia and the whole body and the bed linen should be kept scrupulously clean.

II. PURGATION.

Free evacuation of the bowels with castor oil is the first indication; or calomel followed by castor oil. Later "hot high saline injections serve well to prevent or remove flatulence."

III. FEEDING.

Milk must be reduced in amount or cut out entirely, if there is tendency to flatulence. Clean, pure milk in clean receptacles, taken into a clean mouth and swallowed into a clean stomach, is emphasized. In high fever and in serious illness milk is not well digested, and even diluted or peptonized milk must perhaps be omitted. If milk can not be given, "plain water, barley water, or some thin preparation of food or egg albumin is indicated." The substitute selected depends on the age of the patient and the ability to digest. "In the treatment of pneumonia, put the whole attention on everything but the lungs. Purgation and courageous starvation is the first treatment in time and in importance."

IV. ANTIPYRETICS.

Not the height of the temperature alone, but an added toxemia, as shown by a dull apathetic condition or stupor, restlessness or delirium, call for antipyretics. Coal-tar products should not be used. "Sponging, cold applications laid on, free drinking of water, cold bowel injections, cold air in the room, all these may be used. Tub baths may be used freely if they are found to quiet the patient better and to disturb him less than sponging." The feet of the child should not be allowed to be cold; they should be kept warm. If the feet and body are warm, exposure to fresh, cold air can do the patient nothing but good. Hence he advocates the "outdoor open air day and night."

V. HEART STIMULANTS.

The hearts of young children rarely require stimulation. Flatulency should be prevented as tending to disturb the heart and breathing, and with the feet warm and the air fresh, drug stimulation will not often be needed. If they are needed, Northrup prefers wine, whisky and strychnin. He prepares the wine or whisky in sufficient quantity for half a day and well diluted, the wine with three volumes of water, the whisky with eight volumes. From this diluted wine or whisky the patient is given a small dose, according to the general indications of depression. The pulse should not be watched too carefully in children; it is the general condition that is more important.

"If strychnin is needed, the dose should be from 1/120 to 1/60 of a grain every four hours, according to the age and needs."

Rest and quiet, promoting the general comfort, Northrup regards as the most important directions of all concerning the treatment of pneumonia. It should be remembered that the physician's function is to aid the little patient in his struggle against toxemia, and that "the prognosis in primary pneumonia is good in 90 per cent. of cases. Let us aid, not take charge of its struggle, not handicap the patient. Give all treatment at prescribed intervals, and let the child rest and sleep uninterruptedly for three hours or more. Give food and medicines, and arrange its toilet at the same interruption of rest and sleep. Make the child comfortable and let it rest. Avoid poultices unless for local pain, using them then only intermittently, letting the skin become dry between applications and discontinuing as soon as possible. Do not bind them around the chest, but lay them against the localities only. Cold local applications on the lungs are useful, but, in my experience, distress the child. They are better borne by adults."

The treatment of pneumonia as above outlined by Dr. Northrup is timely and commendatory. Too much is done for a sick child; they are not allowed to rest; poultices have been much over-used in young children. It is possible from over-poulticing so to congest the pleura in pneumonia as to precipitate an empyema.

Impetigo Contagiosa.

Outside of the eczemas, and only slightly resembled by one of them (eczema vesiculosum, commonly called "milk crust"), from which it is generally easily differentiated by the more or less scattered lesions and absence of itching, there is no more common, unsightly and annoying skin condition to which children are subject than impetigo contagiosa. Rebellious to any but the proper treatment, it yields readily when that is pursued, and only a few days are necessary to effect a cure.

First of all, the scabs must be removed and the intestinal tract cleaned. The latter is best done with a simple dose of calomel at bedtime (2 grains if the child is 5 years old), followed by half a siedlitz powder in the morning. Before the child is put to bed the scabs should be thoroughly smeared with either vaselin or olive oil. In the morning they will generally be found soft enough to be readily removed with soap and water. If the lesions are on the scalp, place over them several layers of gauze wet with the following solution:

℞.	gm. or c.c.	
Zinci sulphatis	50	gr. x
Phenolis liquefacti	1	m. xv
Aquæ ad	150	fl℥v

M. et sig.

Next cover with rubber tissue and bandage. This should be done in the morning, and the gauze should be moistened up two or three times during the day and again at bedtime. The next morning the scabs may be removed with soap and water. They must be removed thoroughly and a perfectly clean surface left, otherwise the treatment will not be entirely successful. When this is done apply the following ointment:

℞.	gm.	
Unguenti hydrargyri ammoniati	30	℥i

Sig.: Apply to the affected skin three times a day.

Two or three days are usually sufficient to effect a cure.

After the catharsis a tonic is generally indicated, for which one of the following may be used for a child 5 years old:

℞.	gm.	
Ferri carbonatis saccharati	2	gr. xxx

Fac capsulas 20. Sig.: One capsule three times a day, after meals. Or:

℞.	cc.	
Tinct. ferri chloridi	2	m. xl
Syr. acidi citrici	25	fl℥i
Aquæ ad	100	fl℥iv

M. Sig.: 5 c.c., a teaspoonful, in plenty of water, three times a day, after meals.

Perhaps the best and most easily administered iron for children is the saccharated oxid of iron, given in compressed tablets of three grains each. The child chews up one of these sweet tablets three times a day, after meals.

Hay Fever.

Dr. E. Fletcher Ingals, Chicago, writes: The prescription for hay fever in the department of Therapeutics in THE JOURNAL, July 6, 1907, p. 84, and credited to me, I am unable to remember as having recommended at any time, for it certainly is objectionable in several ways: 1, I have not tested resorcinol in this connection; 2, the adrenalin chlorid, one-half grain to two ounces, would be very irritating in most cases of hay fever, and 3, the boric acid I do not use in this connection, as I find the biborate of soda much better. I have found the following prescription very useful in some cases and think it well to try it in every case:

℞.	gm.		
Cocainæ hydrochloridi	15	or	gr. iiss
Sodii boratis	30		gr. v
Suprarenalin (1-1,000)	4		3i
Glycerini	2		3ss
Aquæ camphoræ ad	30		℥i

M. Sig.: Use as a spray to the nose four or five times daily, or oftener if needed.

Correspondence

Taxing Hospitals.

NEW YORK CITY, July 29, 1907.

To the Editor:—May I call attention to a possible blessing which the people of Illinois may receive from the recent decision of the courts in that state, that hospitals receiving pay patients are taxable? Will it not advance the cause of deserving medical charities and do much to make the able-to-pay patient realize that free medical attendance is as much a charity as a free bed or a free meal? Conditions may be different in Chicago, but in New York City many are unabashed at applying for free treatment at the hospital where many pay patients are treated, and yet would be ashamed to go to Bellevue, which is known to be only a charitable institution. Likewise, many who would not send their servants or clerks to Bellevue (or at least, would not wish it known they had done so), will unhesitatingly send them to a semi-private hospital—to the free wards.

As I advocated in *Charities* about two years ago, in an article which you saw fit to quote in your editorial[1] columns, it seems to me that the first step toward the radical cure of the abuse of medical charities must be their total separation from the cloak of medical services which are not charitable. May not the taxing of all but the strictly public institutions be a step in the right direction? JOHN JOSEPH NUTT, M.D.

The Guide to Current Medical Literature.

CHICAGO, July 9, 1907.

To the Editor:—When THE JOURNAL issued the first volume of its "Guide to Current Medical Literature, with an Index of Authors and Titles," I could not help complimenting you on the excellent work achieved. For several years past I have been watching the progress of this feature of THE JOURNAL, and I now again take the opportunity of complimenting you and the staff for having produced such an excellent one this year. The last issue of this index far surpasses any other—particularly as to classification, subject matter and cross index. It would indeed be very strange if the medical profession did not thoroughly appreciate your efforts, for the index has always been an excellent reference volume for the survey of anything and everything appertaining to medicine. It has been my constant companion in doing medical literary work. I hope that others use it as much as I do. GEORGE F. SUKER.

The Bibliography.

CHICAGO, July 25, 1907.

To the Editor:—The papers read at the annual meeting of the American Medical Association often represent the results of personal experience and in many instances reference is made to the work of others or to the author's earlier reports. The earnest student is often anxious to learn more and his efforts are greatly facilitated if there is appended to the paper an exact list of references. Such a bibliography is easily prepared if the author will think of it in time. A distinguished Buffalo gynecologist told me at the Atlantic City meeting that, in the preparation of his paper, he had spent two weeks in the Surgeon General's library at Washington. It is to be hoped that we may receive the benefit of his research in the form of specific reference so that all interested may know exactly where to look for additional information. I suggest to all essayists the great value and convenience of an adequate and correct bibliography. DENSLOW LEWIS.

The Established Specialist vs. the "Developing Physician."

DEPEW, N. Y., July 27, 1907.

To the Editor:—Dr. Normon in his paper published in THE JOURNAL of the A.M.A. Number 23, page 1977. In that part of his paper where he described the City Physician vs the Country Physician, he describes a state of affairs the existence of which has been positively demonstrated to me. The difference or unfairness or foul play, however, is not between the Country Physician and the City Physician, but it is between the Established Specialist and the College Professor on the one hand; and the General Practitioner or the Developing Physician on the other hand.

Not only are our state meetings largely run and positively controlled by the Established Specialist and the College Professor but likewise our National Body or the Annual Meeting of the American Medical Association is positively controlled by that same class of men.

Compared to the number of membership what is the percentage of General Practitioners or Developing Physicians or developing Specialists, as you please, that appear on the programme of our annual meetings of the A.M.A. as compared with the number of Established Specialists or "College Professors?

Some may claim that the Common Physician or the Developing Specialist does not want to read papers, but this is a mistake. They do want to read and many of them have something original and of great interest to bring up for discussion, but the Secretary of the section, (if he takes the trouble to answer at all) informs the Common Doctor" that the programe is full etc., and when the programe finally comes out the "Common Doctor" has the pleasure of seeing the same old Professors and Eminent Specialists there on the programme (with their book agent at his door) that have appeared on the programe year after year to talk on some long established facts that all are familiar with and that no one of average intelligence would consider of sufficient importance to waste the time to hear it re-hashed.

Now these are the facts of the case as all well know. What shall we do about it? One of two things.

1st. The Common Physician must become a better politician. Elect your share of officers, organize, go to your county, your state and your national meetings and vote and know who you vote for.

2nd. If the Common Developing Physician and the Established Specialist and College Professor cannot agreeably associate and listen to each others papers, then it would be better and only fair play to divide and have a Common Doctors branch and an Established Specialists and College Professors Branch.

The attendance at our meetings, both state and national would no doubt be twice what it now is and much more agreeable and instructive could the solution of this problem be brought about so that the meetings would be of mutual interest.

Some timid physicians, instead of boldly demanding their rights, silently mope over their trouble and show their grievance at the regular medical gatherings by their absence only.

The extent of the existance of this spirit or condition of affairs is evidenced in a manner that none can dispute by the registration lists of the annual meetings which registration lists always show a great preponderence of Established Specialists and College Professors in attendance as compared to the Common Physicians while in membership the ratio is just the reverse, the Common Physicians out numbering their society "rulers or bosses" by a vast majority perhaps ten to one.

The medical societies of today are run by a set or fixed political machine of appointments which practically disfranchizes its members.

What percentage of members of the county, state and national societies of today are encouraged to take any actual part in the management of its affairs, other then to criticize the appointments after they are made?

In an organization, or nation where the *ballot* is actually or designedly the ruling power all men must be considered equal and are from a governing standpoint equal, therefore, would it not be well to smooth down and eliminate the difference before it ruptures our ranks. GEO. N. JACK.

1. THE JOURNAL A. M. A., May 27, 1905, 1691.

Diagnosis in Incipient Insanity.—There is no doubt that a training in the accurate observations of symptoms in incipient mental disorders is needed, to give that ounce of prevention which in mental disease is worth its hundreds of pounds of cure.—F. P. Norbury, M.D., in *Charities and the Commons.*

Book Notices

THE HOME MEDICAL LIBRARY. By Kenelm Winslow, B.A.S., M.D., Formerly Assistant Professor Comparative Therapeutics, Harvard University. With the Cooperation of Many Medical Advising Editors and Special Contributors. First Aid, Family Medicines, Etc. In Six Volumes. Cloth. Pp. about 270 each. Price, $7.50. New York: The Review of Reviews Co., 1907.

The first volume is devoted to first aid in emergencies, including emergency treatment of fractures, dislocations, wounds, poisoning, and accidents of various sorts, as well as a popular consideration of germ diseases, with some instructions regarding prevention of contagion, avoidance of disease, etc. The second volume takes up diseases of the eye, ear, throat and nose and the care of these organs, as well as skin diseases, headache, rheumatism and sexual hygiene. The latter part of the volume is devoted to an article on insanity by Dr. Albert Warren Ferris and an appendix on "patent medicines." The observance, by the public, of the three rules laid down by the writer would practically solve the proprietary medicine question. They are: Do not use any remedy that does not show the formula on the label; consult a physician before using very much of any preparation; take no medicine internally without a physician's advice. In this article the pure food and drug legislation as well as the articles in *Collier's Weekly* are reviewed and summarized. Special attention is paid to headache powders and "tonics."

Volume three takes up nervous diseases, the mother and child, diseases of the heart, and diseases of digestion. The chapters regarding the care of infants, infant feeding, etc., are particularly valuable, giving the young mother much information that the physician would be glad to see in her hands. Volume four, on exercise, long life, etc., has a long, copiously illustrated article by Dr. Dudley A. Sargent. The chapter on "Diet and Hygiene for Long Life," by Sir Henry Thompson, and one on the "Preparation of Foods" by Janet M. Hill, complete the volume. Volume five comprises an article on sanitation by Dr. Thomas Darlington, one on water supply and purification by William P. Gerhard, with articles on pure food and management of houses, including plumbing, etc., while volume six, by S. W. Mitchell and S. E. White, take up the value of outdoor life in a practical way. This volume is, in many ways, the most enjoyable of the series.

This little set of six volumes is thoroughly commendable and should have a wide circulation. The only difficulty is that those who need it the most are apt to see the least of it.

THE STANDARD FAMILY PHYSICIAN. A Practical International Encyclopedia of Medicine and Hygiene, Especially Prepared for the Household. By Prof. Carl Reissig, M.D., of Hamburg, Germany, and Smith Ely Jelliffe, A.M., M.D., Ph.D., Professor of Pharmacognosy, Columbia University, with the Assistance of American and German Specialists in the Treatment of Diseases and Experts in Medicine and Surgery. Vols. I and II. Buckram. Pp. 1,050. Price, $15.00. New York and London: Funk & Wagnalls Co. 1907.

The need of a popular work on medicine that will not cater to unwise self-medication will not be questioned. On the intelligence of the layman in medical questions must depend the final outcome of the struggle between legitimate medicine and quackery and between society and the vicious habits and conditions which endanger the public health. In the education of the lay public great aid may be afforded by an authoritative work on household medicine. This desideratum is claimed to be supplied by the present work. The plan of this work includes a treatise on anatomy, physiology and pathology, and an encyclopedic dictionary treating of those topics in medicine which would be likely to have interest for the average layman. The first part occupies 97 pages of the first volume, while the dictionary completes the first and occupies most of the second volume. The treatment of the anatomic and physiologic part is necessarily brief but, so far as our examination goes, scientifically accurate. The second part deals with special pathology, pharmacology, diet and nursing. No exception can be taken to the accuracy of the facts stated and the descriptions of treatment give no encouragement to self-medication. The attitude toward quackery, proprietary remedies, etc., is excellent. The question arises, however, whether it is necessary to have so large and expensive a book as this. Would not a work of average size and of a price within the reach of the average family be far better? An encyclopedic work like this one can be purchased only by the few and will be thoroughly read by still fewer of those who need to know its contents.

ULCERATION OF THE CORNEA. By Angus MacNab, B.A., B.Sc., etc., Chief Clinical Assistant, Royal London Ophthalmic Hospital. Cloth. Pp. 196. Price, $2.00 net. New York: William Wood & Co., 1907.

This is a review of those numerous lesions of the cornea that are attended by loss of substance—no small proportion of the entire list of kertatitic processes. Beginning with a description of methods of examination and pathologic modes of invasion, the author gives a full account of the bacterial lesions of the corneal tissues as primary manifestations. Secondary infections of the cornea include diplobacillary ulcer, the infectious marginal ulcer of zur Nedden and those ulcerative processes that are seen with greater or less frequency in conjunctivitis resulting from the presence of pneumococcus, Koch-Weeks bacillus, and the staphylococcus, as well as from conjunctival lesions in diphtheria and in gonorrhea. MacNab then discusses the corneal ulceration that is so often associated with eczema and with so-called trophic disturbances—keratitis neuroparalytica, corneal herpes, keratomalacia, etc. In an appendix are considered the operations that are frequently demanded in serious ulceration of the cornea, among them Axenfeld's operation for excision of the lachrymal sac.

A useful part of this section is formed by the directions for removal of material from an ulcer for bacterial examination, formulas for smear stains and useful observations on laboratory methods connected therewith. Although the illustrations are poor and inadequate, the text is carefully written and reflects our latest and most reliable information on the subject.

TEXT-BOOK ON DISEASES OF THE HEART. B. G. Steell, M.D., F.R.C.P., Lecturer on Diseases of the Heart in the University of Manchester; Senior Physician to the Manchester Royal Infirmary, with an appendix on the Volume of Blood in Relation to Heart Disease. By J. L. Smith, M.A., M.D., Professor of Pathology in the University of Manchester. Cloth. Pp. 389. Price, $2.00 net. Philadelphia: P. Blakiston's Son & Co. 1906.

In the preface the author states that "authority" has been excluded as far as possible in the description of the clinical aspects of the diseases of the heart, i. e., the accounts are drawn "from life." This explains occasional omissions in the book and the fact that the author dwells with particular emphasis on certain points where he is, perhaps, rather at variance with authority. In some places the book is somewhat on the quiz compend order, with mere enumeration of facts rather than logical consideration of them. The chapter on the instrumental examination of the arteries and veins is timely and should whet the student's appetite for a more extended study of the writings of Mackenzie, Wenckenbach and others. The work is hardly to be classed as a systematic treatise to be placed in the hand of the undergraduate, but it is full of suggestive matter based on careful observation and fearless, original thinking and ought to be read by all specialists along the line of heart disease. An interesting chapter of ten pages on the volume of blood in relation to heart disease is added by Dr. J. L. Smith.

ICONOGRAPHIA PARASITORUM HOMINIS, Studies from the Zoological Laboratory of the University of Nebraska. No. 70. By Henry B. Ward. Paper. Pp. 25. Lincoln, 1907.

This is a collation of figures, with brief explanatory text, to aid in the study and diagnosis of the less common parasites of man. The work is in the nature of an atlas and makes a handy reference for students of pathology and comparative medicine. The plates are well made and are sufficiently diagramatic to show the points the author intends to make.

TECHNIC OF OPERATIONS ON THE INTESTINES AND STOMACH. By A. H. Gould, M.D., of Boston. With 190 Illustrations. Mostly Original. Several of them in Color. Cloth. Pp. 302. Price, $5.00. Philadelphia: W. B. Saunders Company, 1906.

A review of the book described in the above heading appeared in THE JOURNAL, July 27, 1907, page 344, but by some mischance the wrong heading was placed on it so that the review appeared to refer to a work on the same subject by Einhorn.

Miscellany

THE GREAT AMERICAN FRAUD.

Nostrum Advertisements in the Religious Press—A Deserved Arraignment of Corruption in High Places.

From time to time we have made reference in these columns to the abuses which have existed and still exist in regard to the class of advertisements carried by religious journals. In last week's issue of *Collier's Weekly* the subject is treated at length by Samuel Hopkins Adams in his latest article on the Great American Fraud.

"Religious journalism," Mr. Adams says, "props one corner of the tottering Great American Fraud. Lend a quack or swindling 'patent-medicine' vender the countenance of the church, and he is a made man. Peruna and Duffy's Malt Whisky will spend freely, even extravagantly, to get endorsements from the clergy; mostly on the strength of the churchly title. 'Father John's' face, exploited shamelessly on the boardings which display the dubious virtues of 'Father John's Medicine,' capitalizes the protesting but defenseless Roman Catholic priesthood for the profits of chicanery. It is worth double his rentals for the scoundrelly Richie, D.D., with his 'drug-habit cure,' of concealed morphin, to head his correspondence 'Presbyterian Building, New York City,' and when the Board of Home Missions, which controls the building, discovered the real nature of his business and promptly turned him out, he lost a valuable asset. For Dr. J. W. Blosser of Atlanta to decorate his quack catarrh advertisements (principally in the religious press) with the ornament 'Rev.' means thousands of dollars of added revenue. What did that prosperous medical rascal and fraud, Dr. W. O. Coffee of Des Moines, do when he found that *Collier's* was looking into his 'blindness and deafness cure' fake? Displayed an endorsement from the pastor of his church as a blanket defense. Religious backing, of whatever kind, inspires confidence; and the only religious backing that is openly on the market is religious journalism."

CREDIT WHERE CREDIT IS DUE.

In the effort to be fair THE JOURNAL has recently[1] given credit to those religious papers who either do not lend their pages to the exploitation of fraudulent nostrums or who are honestly striving to eradicate such as they have already contracted for. Mr. Adams gives a much larger list and comments as follows:

"It must not be inferred, however, that all the prints which serve God in their editorial pages serve Mammon in their advertisements. There are journals, like the Unitarian *Christian Register*, the *Universalist Leader*, the New York *Christian Advocate* (Methodist), the Nashville *Christian Advocate* (Methodist), the Los Angeles *Tidings* (Roman Catholic), the *American Hebrew and Jewish Messenger*, the *Record of Christian Work*, the *Christian Herald*, the *Religious Telescope* (United Brethren), the *American Friend*, and *Forward*, which 'touch not the unclean thing.' Others there are, such as the New York *Churchman* (Episcopalian), the *Southern* (Atlanta) *Presbyterian*, the *Interior* (Presbyterian), and the *Epworth Herald* (Methodist), which, with an honest intention and a general policy of decency in advertising, occasionally, through inadvertence, admit fraudulent or dangerous 'patent medicines' to their columns."

CAVEAT EMPTOR!

One of the stock defenses of the religious journals that advertise nostrums, is, that they refuse, yearly, thousands of dollars' worth of advertising because of its objectionableness.

"Loud and clear in this choral offering rises the voice of the *Christian Endeavor World*. The *Christian Endeavor World*, as the 'official representative of the Christian Endeavor movement,' displays, as its editorial motto, 'Continuing the Golden Rule.' That is very good so far as it goes. But, after studying its medical columns, I would suggest as a second motto, to be printed above its advertisements, the warning, *Caveat emptor!* For the intending purchaser may well beware in reading the man-traps which constitute so large a part of the *Christian Endeavor World's* patronage. Clippings from a few issues, taken haphazard, show, in the line of medical advertising, eight obvious swindles, five dangerous quackeries, and seven promised 'cures' for diseases which are incurable by medicine.

"'Continuing the Golden Rule!' Is this continuing the Golden Rule, to invite the unsuspecting sufferer to cure his own rheumatism by pasting a bit of sticking plaster, surnamed 'Magic Foot Drafts,' on the bottom of his feet, in the hope of 'drawing out the uric acid' by a species of mysterious suction? Or to lure him deeper into the slough of the drug habit by involving him in the toils of the Dr. J. L. Stephens' morphin cure, which consists in giving him, in secret form, all the morphin he craves? Or to point him to the den of that arch faker of optical malpractice, Oren Oneal? Or to deliver him to the tender mercies of Dr. Bye, of cancer ill-fame, or of the remarkably Reverend Blosser, or of Gauss the 'catarrh specialist'? Is it doing unto others as you would have them do unto you, to combine with the swindler Kilmer in the vending of his 'Swamp Root,' or with the bunco artist Cheney in distributing his 'Hall's Catarrh Cure' with its fake $100 reward for any case it can not cure? Does the responsible publisher of the *Christian Endeavor World* really believe that 'crooked spines can be made straight' by mail? And that F. W. Parkhurst, 'the well-known publisher of Boston,' having 'nothing to sell,' yearns to impart to the public, free of charge, his 'cure' for neuralgia and rheumatism? 'Continuing the Golden Rule,' indeed! Continuing the Golden Brick!"

MAKING A VIRTUE OF NECESSITY.

The rejected advertising spoken of is as a rule merely of those products that are either outspokenly alcoholic in content or such as have been so thoroughly exposed through the press that the publishers dare not accept their advertisements. Says *Collier's:*

"The rejections are too often formal and literal, rather than based on any principle. The Duffy's Malt Whisky concern (whose product is both a fake medicine and a poor whisky) told me that they were constantly appealed to by church papers to advertise under the name of 'Duffy's Malt' or 'Duffy's Malt Remedy.' 'So long as you use the word whisky,' say the pious-minded publishers, 'we can not, of course, admit you to our columns.' That the preparation, with murderous mendacity, claims to cure tuberculosis and pneumonia makes no difference to their eagerness for a share of its earnings. The reek of blood itself will not revolt them, but the smell of alcohol sends their hands up in holy horror. Thus a fine old blended quackery like Peruna will be refused, on the ground that it is a known intoxicant, by religious editors who accept readily enough medical lures to the enslavements of morphin, or even the claims of preparations for the producing of abortion."

EDITORIALS FOR SALE.

Even the editorial columns of some of these journals are open to the purveyor of nostrums.

"The *Christian Century* of Chicago formerly performed this service for its patrons, Oren Oneal and P. Chester Madison, through the pen of its editor, Charles A. Young, but either through a change of heart or a change of editor (both, I suspect) it has forsworn such practices and now comes out with a definite announcement that no suspicious or fraudulent advertising will be admitted to its columns, a pronunciamento which its recent issues certainly bear out, so far as medical advertising goes. That so radical a change of policy should have been put in force is indicative of the recent awakening in religious journalistic circles.

"The 'editorial puff' market is not depleted, however. For any who wish to buy, the Rev. C. H. Forney, D.D., LL.D., editor of the *Church Advocate* of Harrisburg, Pa., is on the bargain counter. 'Organ of the Churches of God' the *Church Advocate* terms itself. Among other assorted rascalities, it publishes the advertisement of Dr. W. O. Smith, 'Specialist,' who deals in 'free medical advice by mail.'

"'Dr. Smith,' proclaims the advertisement, 'has adopted a method by which he can diagnose chronic diseases and successfully treat them at a distance. Dr. Smith has discovered a Positive, Radical, and Safe cure for all forms of Nervous, Chronic, and Special Diseases, such as Weakness in the Back and Limbs, General Debility, Impotence, Lack of Confidence, Nervousness, Langour (*sic*), Confusion of Ideas, Palpitation of the Heart, Timidity, Trembling of the Limbs, Dimness of Sight or Giddiness; Diseases of the Throat, Head, Nose, Stomach, Liver, and Kidneys; Skin Diseases of All Kinds; Blood Poison, Nervous and Vital Weakness, Catarrh, Rheumatism, Dropsy, Asthma, Chronic Bronchitis; Diseases of Women and all Chronic, Lingering Complaints of Both Sexes. Take one Candid Thought before it is too late. A Week or Month may place your case beyond the Reach of Hope.'

1. THE JOURNAL, July 6, 1907, page 53.

"No intelligent person can read that advertisement without knowing that Dr. W. O. Smith, 'Specialist,' is a charlatan of the most malignant description. But it is not for the intelligent, but for the suffering and hopeful ignoramus that Dr. Smith's bunco game is prepared. And here, in the *Church Advocate's* editorial columns—*editorial*, mind you—we behold the Rev. C. H. Forney, D.D., LL.D., acting as 'barker' for the quack.

"'The use of electricity in therapeutics is of comparatively (*sic*) recent origin, and its value is not generally known today, yet in its application to medicine and surgery it has been found to be of special efficacy. The variety of diseases for which it may be employed with the best results is indicated in the advertisement of Dr. W. O. Smith, which may be found on another page. As Dr. Smith is a well-known specialist in this line of his profession, a worthy and reliable gentleman, we take pleasure in recommending him to our readers. You run no risk whatever in consulting him.'

"The Richmond *Religious Herald*, which is filled with quackery of all kinds, willingly prints as reading matter, in exact imitation of a legitimate paragraph, exploitations of Dr. D. M. Bye's cancer 'cure,' and of Vitæ-Ore. For thus deceiving its own subscribers it receives an extra rate from the charlatans."

EXCUSES THAT DO NOT EXCUSE.

As an excuse for its delinquencies "the *Baptist Watchman* of Boston publishes a defense of patent-medicine advertising which embodies certain of the arguments furnished in the 'canned editorials' sent out by the Proprietary Association of America. 'There are many medicines and much medical practice which ought to be condemned,' writes the editor, 'and the *Watchman* will not knowingly approve or aid either in any way whatever. There are also many proprietary medicines which are simply physicians' prescriptions or methods which have proved successful in private practice, and which are advertised simply to give them a wider usefulness. The *Watchman* rejects advertisements all the time of those things which may reasonably be objected to.'

"An excellent platform if lived up to. But the *Watchman* is jam-full of advertisements of both kinds: the legitimate proprietary remedies and the arrant shams—mostly the latter. Is there no reasonable objection in the mind of Edmund F. Merriam, editor of the *Watchman*, to Piso's Consumption Cure, which, under the Pure Food Law, has been forced to change its name on the labels (though not in its advertising) because its claim to cure consumption is baldly fraudulent? Is not Mrs. Winslow's Soothing Syrup, with its enslaving morphin, a patent medicine which 'may reasonably be objected to'? Will Editor Merriam explain by what phenomenon of logic or elasticity of ethics he accepts the lucubrations of Dr. Bye, or Oren Oneal, of Liquozone, of Actina, that marvelous, two-ended mechanical appliance which 'cures' deafness at one terminus and blindness at the other, and all with a little oil of mustard, and of Mrs. M. Summers of Notre Dame, Ill., who in print yearns to impart to suffering humanity a sure cure for rheumatism, kidney troubles, and women's diseases, but who, in a composite photograph, would exhibit a full beard and a bass voice, and answer to the description of Vanderhoof & Co., patent-medicine fakers? Finally, has the *Watchman's* editor noted, by any chance, that Dr. Farrar of Boston, one of those leeches who claim to cure rupture 'without the knife or pain,' embodies this significant sentence in his advertisement in the *Watchman's* columns: '*Inquire of Publisher of this paper*'. If this does not mean that the *Watchman's* editorial endorsement is thrown in as a bonus when a quack purchases advertising space, then what does it mean? On the other hand, be it said to the paper's credit, its editorials fly in the face of its patent-medicine patrons by advocating a law 'requiring the full formula on all proprietary 'remedies.'"

THE MOTE AND THE BEAM.

The human tendency to magnify the mote in our neighbor's eye and totally overlook the beam in our own, is beautifully exemplified in some editorial writings in the religious press.

"For example, the *Gospel Advocate* of Nashville, Tenn., is quite sure," says Mr. Adams, "that the country is approaching ruin through cigarettes; and it further opines that 'the use of the organ in worship is a growing sin in our churches.' I have heard some pretty bad organists myself, but if I edited the *Gospel Advocate* I should clean up my pages a little before setting out to save my fellows from going to perdition via the music route. As a start, the editor might throw out his cancer cures, Vitæ-Ore, Mrs. Summers (the bearded lady of Notre Dame), Winslow's Soothing Syrup, the Reverend Blosser, and the quack Dr. Hathaway. Later, he might continue the good work by casting out the various lesser chicaneries which dubiously decorate his paper, at the end of which house-cleaning he could, with a better grace, tackle the body-destroying cigarette and the soul-destroying pipe organ.

"To the sensitive spirits of the Baltimore and Richmond *Christian Advocate* it is a lamentable thing that terrified Italians, during an earthquake, should have fallen on their knees and prayed to the saints. An editorial on this topic is headed 'Roman Catholic Superstition.' What kind of superstition is it which the *Christian Advocate* incites in its readers when it points them to A. I. M. (Acid Iron Mineral), purporting to be a cure for anything from eczema to snake-bite, with a special claim as a remedy against bleeding to death? Winslow's Soothing Syrup, Vitæ-Ore, the Kellam Cancer Hospital, the Jackson 'free' rheumatism cure, and Dr. J. W. Blosser of catarrh-cure fame, who is sometimes a Rev. Dr. and sometimes a medical doctor, and at all times a fraud, also appear as appellants to the particular type of superstition which the editor of the *Advocate* fosters. Though not a Roman Catholic, I should much rather appeal for help to a saint in the event of earthquake than to Kellam or Blosser in case of cancer or catarrh.

"'Dr. Buckley has done the Christian public a vast service in his exposures of Christian Science,' approves G. C. Rankin, D.D., editor of the *Texas Christian Advocate*, writing of Dr. J. M. Buckley of the New York *Christian Advocate*.. This is all very well for Dr. Rankin; Christian Science does not advertise in Dr. Rankin's publication, therefore that politic person can commend attacks on it with a free heart. But Dr. Buckley, in the New York *Christian Advocate*, has for years been waging a relentless war not only on Christian Science, but also on the fraud medicines and 'sure cures' which *do* advertise in Dr. Rankin's journal. Does Dr. Rankin exhibit any irrepressible enthusiasm over this phase of his brother laborer's energetic work? Not so far as has appeared. Masterly silence has been the keystone of his strategic policy in this respect. And with sound reason, for if one cuts out from any single issue of Dr. Rankin's *Texas Christian Advocate* all the foul, indecent, dangerous, and mendacious paid matter, the remnant resembles a pattern for a broad-mesh mosquito netting. Cancer quacks, dropsy quacks, private disease quacks, all find equally hospitable refuge, at so much per line, in Dr. Rankin's columns. One enterprising person attains the height of absurdity by advertising, under the self-bestowed title of 'The Texas Wonder,' to cure all kidney and rheumatic troubles by mail for $1. Another advertisement (which most daily papers throw into the waste basket) comes near the depth of degradation in exploiting 'Man Medicine.' Since this reverend gentleman so admires Dr. Buckley, I would respectfully suggest that he make a careful study of that militant editor's advertising pages; for therefrom he will learn, vastly to his surprise, very likely, that it is possible for one of his own faith and church to publish a religious journal, and a successful religious journal, whose advertising pages are clean, honest, and independent of a dollar's aid from any exponent of the Great American Fraud."

THE UNDENOMINATIONAL PRESS

After dealing specifically with the denominational press, Mr. Adams turns his attention to the undenominational press, which he claims does not shine by comparison.

"The *Christian Work and Evangelist* prints the lures of Sproule, Mrs. M. Summers of Notre Dame, Dr. Bye, Piso's Consumption Cure and Winslow's Soothing Syrup, those twin 'dopes,' and Alice A. Wetmore, who has discovered a 'perfect home cure' for heart disease. The *Ram's Horn* excludes from its pages 'everybody and everything that we believe might abuse the confidence of our readers.' What a singularly touching trust is that of the *Ram's Horn* in its advertising patrons, when, to go no farther, it implicitly expresses its confidence in the thieving Dr. Coffee of Des Moines, and in Oxydonor, which modestly promises to cure not only all nervous complications, but such simple ailments as pneumonia and locomotor ataxia! The list might be indefinitely prolonged, extending from publications which will print anything in which there is a dollar to those which exclude open quacks and dangerous medicines, but accept the comparatively harmless but essentially mendacious claims of such proprietaries as Cuticura Soap and Stuart's Dyspepsia Tablets."

The article as a whole is a serious indictment of the religious press, but an indictment, we regret to say, which is deserved. There are several "telling" illustrations, which add immensely to the effectiveness of the article but to which we regret we can not give space.

Right to Practice Taken from Two Advertising Quacks.

The Missouri State Board of Health has shown a singular lack of appreciation of the claims of Drs. Bye and Johnson, the notorious cancer specialists. These enterprising gentlemen after long years of study of the cancer problem (it is said that the preparation of Dr. Johnson's book on cancer took the patient work of two weeks, with the aid of a modern advertising agency) had endeavored to put before the public the results of their work, but the board, in a manner as heartless as that in which these men misled and bled their victims, has decided that such scientific effort is unprofessional advertising and has revoked their licenses. From the *Independent* (Kansas City), August 3, we take some of the details.

In the trial of Dr. Johnson, who proved to be a young man, although he was said to have "devoted long years to a study of cancer," a beautifully prepared pamphlet, entitled "Cancer and Its Cure," was introduced in evidence, with such choice bits marked as these:

> "In this little volume I wish to tell the true story of a wonderful cure for cancer in all its forms."
>
> "The correct principle of my treatment is recognized by all schools of medicine. My Mild Combination Treatment eliminates the deadly cancer poison."
>
> "Warts, moles and scars develop into cancer."
>
> "My method of treatment is indorsed by many capable surgeons and physicians."
>
> "It is easy to be treated at home and treated successfully by my method. You have but to fill out symptom blank which I furnish you and return it."

This philanthropic method received the most cruel treatment from the prosecution before the board, affidavits being introduced to show that these statements were inaccurate and tended to mislead the public, thereby making it possible for Johnson to practice deception on many ignorant but afflicted persons and that his treatment has no standing whatever. The *Independent* gives the following account of part of the examination:

> Like a flash the lawyers dipped into "Doctor" Johnson's life, proved that his "long years of study" consisted of short courses at poor schools, and that his "great work" was written in "two or three weeks" with the aid of an advertising firm. Dr. Lutz, of the board, took charge of the witness for a while and tore his medical pretensions to pieces in a manner that really elicited pity from those around. Dr. Lutz proved that Johnson knew absolutely nothing about cancers at all; that he couldn't even tell the difference between cancer and a common ulcer—that he was a fake of the first water.
>
> Shortly before the noon adjournment the board members asked him if he would have any objection to telling what his "Mild Combination Treatment" consisted of, and appointed Dr. J. D. Griffith as a committee of one to receive the information.
>
> When Dr. Griffith took the stand after luncheon he stated that Johnson had shown him some ordinary salves and pastes, mostly zinc preparations, such as everybody used for ulcers and sores, and that when asked if that was all his "Mild Combination Treatment" consisted of, answered that he had a "secret salve" he would show.
>
> Dr. Frank J. Hall's affidavit was then read. Dr. Hall is professor of pathology in the University of Kansas, and what his affidavit did to Johnson comes under the head of cruelty to animals. He branded his statements as falsehoods, and his claims as being of a "character that tends to mislead and deceive the public, to wrongfully impose on the fears, weakness or ignorance of the sick and credulous, and to defraud the people by false and impossible claims in regard to the treatment of disease."
>
> Dr. Herman E. Pearse, a physician and surgeon known all over the West, took the stand for the state, and looking Johnson square in the eyes, said "Johnson's statements are lies, and he knows that they are lies."

Dr. Johnson's lawyer put in the plea that "every advance in the truth had been met by opposition," but the board seemed determined to follow the precedents of other inquisitors and ignored the fact that scientific investigation had been accelerated and modified by modern business methods. Doubtless many of the long years of investigation were spent in a previous existence and the remarkable Dr. Johnson has come to this earth with some quickened powers which enable him to escape the limitations of ordinary mortals.

Evidently Dr. Bye is a member of a large family in Kansas City and Indianapolis, as was shown up by Samuel Hopkins Adams in his great American fraud articles. The father and three sons have devoted themselves with religious unction and commendable zeal to the accumulation of fortunes by the "Combination Oil Treatment" of cancer. The father is reputed to be a good man; he is said to run a church at his own expense. When arraigned before the board Dr. Bye was not permitted by his attorney to testify, but the board proceeded to quote his pamphlet and on the accusation of making false claims took away his license.

Dr. Bye, like Dr. Johnson, would seem to have discovered the fountain of perpetual youth, for arduous labors and the anxiety attendant on treating thousands of cases of cancer have not aged him, nor have the miseries of his helpless victims depressed his spirits. The *Independent* thus describes his appearance:

> Instead of a gray-headed old man, worn out with laboratory toil, eyes dimmed by poring over huge tomes, there bounced forward a young chap of 25 or 30, goggle-eyed, smooth faced, in no wise differing from scores of other young chaps except for a look of cold blooded craft.

According to the "American Medical Directory," both Bye and Johnson were graduated in 1897 from Bennett Medical College, Chicago, an eclectic institution. According to Polk's directory, in the same year, 1897, they graduated from the Northern Illinois College of Ophthalmology and Otology, although just what this institution is, or where it is located, we do not know. The Missouri State Board of Health is to be congratulated on what it has done in this particular case. We understand that there are other advertising quacks in Missouri whose cases have been investigated by the board.

The Stria Vascularis.—In describing the origin of the cells found in the deeper layer of the stria vascularis, George E. Shambaugh, in the *Archives of Otology*, June, 1907, says that the blood vessels of the stria are placed directly beneath the surface layer of epithelium and as soon as formed are enveloped in protoplasmic processes from the surface layer. In addition, the cells immediately around the blood vessels are clearly derived from the surface layer of epithelium. The cells found in the deeper layer, therefore, are in part epithelial and in part connective tissue. He believes we are justified in assuming that the stria vascularis represents true vascular epithelium.

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, CONTRACT PRACTICE, INSURANCE FEES, MEDICAL LEGISLATION, ETC.

Organization Bulletin in Utah.

The first number of the *Physician's Bulletin*, published by the Third Councilor District Society of Utah, contains the registration provisions of the new medical practice act of Utah, announcements of the next meeting of the society and a large number of organization notes. The summer meeting of the society will be held on Tuesday and Wednesday, August 13 and 14. Following the meeting, fishing and camping parties, made up of members and their families, will visit the southern lakes of Utah and the Grand Canyon of the Colorado. Dr. Frederick Clift of Provo, councilor for the district and president of the society, is the editor of the bulletin.

Iowa Law Amended.

The May number of the *Iowa Health Bulletin* contains the text of the amendment to the Iowa practice act empowering the State Board of Medical Examiners to revoke the license of any physician in the state "who is not of good moral character or who solicits professional patronage by agents, or who profits by the acts of those representing themselves to be his agents, or who is guilty of fraudulent representations as to his skill and ability, or who is guilty of gross unprofessional conduct or incompetency or for habitual intoxication or the drug habit, or if the certificate has been granted on false and fraudulent statements as to graduation or length of practice." The amendment also makes provision for the manner of revoking the license and provides that the physician shall have an opportunity to appear for a hearing, in person or by counsel. If he fails to appear the board is authorized to revoke his certificate. If he appears, the board may receive and consider affidavits and oral statements bearing on the case. If

five members of the board are satisfied that the licentiate is guilty of the offense with which he is charged, the license shall be revoked, after which the holder thereof shall not practice medicine, surgery and obstetrics in the state of Iowa for such a time as the State Board of Health may determine. Any person aggrieved by any rule or order entered under the provisions of the act is given the right of appeal to the district court in the county where the alleged offense was committed, on giving notice to the Board of Medical Examiners of such an appeal within twenty days after the entry of the ruling, order or judgment.

ITINERANT PHYSICIANS.

The bulletin also contains an opinion from the attorney general of the state on the question of licenses for itinerant physicians, to the effect that itinerant physicians must be licensed the same as any other physicians practicing medicine in Iowa; that such license is obtained on the presentation of satisfactory evidence to the board of the possession of proper qualifications, and that the board has discretionary power as to the granting or refusing of such a license. This decision of the attorney general fully sustains the position of the secretary of the board.

Insurance Fees.

The Hendricks County (Ind.) Medical Society has unanimously adopted the Kentucky resolutions regarding life-insurance examinations.

The Adams County (Ohio) Medical Society has adopted the following resolutions which were drawn up by the committee on life insurance. All the registered physicians of Adams County have agreed to abide by this action.

WHEREAS, Many of the life insurance companies have notified their medical examiners of a reduction of examining fees from five to three dollars; and

WHEREAS, We, as physicians, realizing the responsibility incident to and the time required in completing a proper examination, believe such reduction to be unjust; and

WHEREAS, Some of the life insurance companies have always paid, and are now paying, a minimum fee of five dollars for examinations where the amount of the policy is not less than one thousand dollars; therefore be it

Resolved, That we, the undersigned members of the Adams County Medical Society, do hereby declare such reduction to be unjust and that any fee less than five dollars for examinations, where the amount of the policy is not below one thousand dollars, is inadequate; and

Resolved, That on and after Sept. 1, 1907, no one of us will make any examination of any applicant for life insurance where the amount of the policy is not below one thousand dollars for a less fee than five dollars; and

Resolved, That the above named rates do not apply to industrial medical inspections without urine analysis for amounts less than one thousand dollars or to examinations for benevolent organizations; and

Resolved, That no one of us shall enter into any contract or agreement with any corporation, society, association, company or individual to examine applicants for any stated salary or lump sum thereby evading the spirit and instinct of the foregoing resolutions; and be it further

Resolved, That the payment of all fees shall be authorized by the home office of the society or corporation to which such application is made and under no circumstances shall an examiner receive or accept any part of the fee from an agent or other person or corporation unless the full fee be paid by authority of the home office.

Marriages

WILLIAM B. HANELIN, M.D., to Miss Marion Perbohner, both of Chicago, July 31.

DANIEL J. DONNELLY, M.D., to Mrs. Jennie J. Brown, both of Philadelphia, July 24.

EDWIN I. THAYER, M.D., to Miss Minna Lindenmayer, both of Philadelphia, July 17.

JAMES CLEMENT HARKINS, M.D., to Miss Mary Clune, both of New York City, June 3.

H. M. STANLEY, M.D., Corning, Iowa, to Miss Sarah O. Coy of Sheridan, Mo., June 26.

ALBERT R. TUCKER, M.D., Mohawk, Mich., to Miss Lila C. Foley of Eagle Harbor, Mich., June 26.

S. ALFORD BLACKBURN, M.D., to Miss Laura Browning, both of Versailles, Ky., at Midway, Ky., July 24.

LUNSFORD D. FRICKS, M.D., passed assistant surgeon, U. S. P. H. and M.-H. Service, Fort Stanton, N. M., to Miss Edna Grace Beene of Chattanooga, Tenn., at Alamogordo, N. M., July 22.

Deaths

William Thomson, M.D. Jefferson Medical College, Philadelphia, 1855; a member of the American Medical Association; who entered the Army as assistant surgeon in 1861; was afterward on duty at the headquarters of the Army of the Potomac, surgeon in charge of the Douglass Hospital and medical inspector of the department at Washington; was given two brevets, but resigned from the Army in 1866; who is said to have been the first to employ the local application of carbolic acid as a wound disinfectant; for 25 years professor and thereafter emeritus professor of ophthalmology in Jefferson Medical College; consulting surgeon to Wills Eye Hospital; an ophthalomogist of renown, who with Dr. W. S. Norris is said to have made the first successful microphotographic negative in 1864, died at his home in Philadelphia, August 3, aged 74.

William Travis Howard, M.D. Jefferson Medical College, Philadelphia, 1844; one of the founders of the American Gynecological Society, and its president in 1885; president of the Medical and Chirurgical Faculty of Maryland in 1903; for 30 years, up to 1897, professor of gynecology in the University of Maryland School of Medicine, and thereafter emeritus professor; consulting gynecologist to the Union Protestant Infirmary; gynecologist to the Hebrew Hospital and Asylum Association of Baltimore; consulting physician and surgeon to Johns Hopkins Hospital, and one of the founders of the Hospital for the Women of Maryland, died at Narragansett Pier, R. I., July 31, from ptomain poisoning, after a brief illness, aged 86.

William F. Boor, M.D. Jefferson Medical College, Philadelphia, 1853; surgeon of the Fourth Indiana Cavalry, and later surgeon of the First Brigade, Second Division, Army of the Cumberland, during the Civil War; a charter member of the Indiana State and Henry County medical societies; for more than 12 years school trustee; one of the organizers and successively director, vice-president and president of the First National Bank of Newcastle, Ind., died at his home in that city, from paralysis, July 17, aged 88.

James Buckner Killebrew, M.D. University of Virginia, Department of Medicine, Charlottesville, 1896; a member of the American Medical Association; visiting gynecologist to the Mobile City Hospital; president of the Mobile County Medical Society, and adjunct professor of gynecology in the Medical College of Alabama, Mobile, jumped from an automobile to avoid a collision with a freight train, fell beneath the wheels of the train and was killed instantly, July 24, aged 35.

Lucy Hall-Brown, M.D. University of Michigan, Department of Medicine and Surgery, Ann Arbor, 1878; member of the Brooklyn Pathological Society, Kings County Medical Society, and American Electro-Therapeutic Association; vice-president of the American Social Science Association; a member of the council of the National Red Cross Society, died at her home in Los Angeles, August 1, after a long illness.

Harvey B. Dale, M.D. Rush Medical College, Chicago, 1887; Chicago Homeopathic Medical College, 1888; for several years a member and once president of the board of education of Oshkosh, Wis.; some-time city physician and health commissioner, and a member of the State Board of Medical Examiners in 1895, died at St. Mary's Hospital, Oshkosh, a week after an operation for appendicitis, aged 42.

Orlando S. Reynolds, M.D. University of Pennsylvania, Department of Medicine, Philadelphia, 1902; formerly interne at the Episcopal Hospital, Philadelphia, and later a practitioner of McDowell County, W. Va.; a member of the West Virginia State Medical Association and Mingo County Medical Society, died at the home of his father in Keyser, W. Va., July 26, from typhoid fever, aged 28.

David R. Sanders, M.D. Medical College of Ohio, Medical Department, University of Cincinnati, 1877; a member of the Illinois State and Union County medical societies; a veteran of the Civil War; first assistant superintendent of the Illinois Southern Hospital for the Insane, Anna, died at that institution, July 22, from disease of the stomach, after a short illness, aged 62.

Morris H. Goodrick, M.D. Homeopathic Hospital College, Cleveland, Ohio, 1881; an alderman of Jacksonville, Ill.; sometime city health officer, health officer of Morgan County and physician to the Illinois State School for the Blind, died at his home in Jacksonville, July 28, from uremia, after an illness of two weeks, aged 50.

Charles E. Davis, M.D. New York University Medical College, New York City, 1878; of Peoria,; a member of the Illinois State and Peoria County medical societies; died at St. Francis Hospital, Peoria, July 24, from nephritis, after an illness of nearly two years, aged 58.

Benjamin Combe Hopkins, M.D. Jefferson Medical College, Philadelphia, 1855; during the Civil War in charge of a military hospital in Philadelphia, after which he removed to Dunmore, Pa., died at his home in that place, July 22, after an illness of several weeks, aged 77.

Lee McElroy, M.D. Northwestern University Medical School, Chicago, 1905; for two years an interne at the Alexian Brothers' Hospital, Elizabeth, N. J., died at that institution, July 26, from cancer of the gall bladder and duodenum, after an illness of two months, aged 30.

Fleet John Cooper, M.D. College of Physicians and Surgeons, Baltimore, 1884; a member of the Medical Society of the State of North Carolina and Sampson County Medical Society, died at his home in Roseboro, N. C., July 11, after an illness of several weeks, aged 47.

John Clark Budlong, M.D. Hahnemann Medical College and Hospital, Philadelphia, 1863; a member of the board of aldermen of Providence, R. I., and surgeon general of the state for 20 years, died at his home in Providence, July 25, after a long illnes, aged 70.

J. R. Howell, M.D. University of Georgia, Medical Department, Augusta, 1904; a member of the Medical Association of Georgia and Irwin County Medical Society, died at his home in Ocilla, Ga., July 24, from typhoid fever, after an illness of one week.

Gideon Raus Gwynne, M.D. Medical Department of the University of Nashville, Tenn., 1869; a veteran of the Civil War and for many years health officer of Lebanon, Tenn., died suddenly from angina pectoris, at his home in that city, July 23, aged 67.

Edgar Eltinge, M.D. College of Physicians and Surgeons in the City of New York, 1852; a member of the Kings County Medical Society, and for many years a practitioner of Brooklyn, died at his home in Kingston, N. Y., July 28, aged 79.

James P. Tormey, M.D. Bellevue Hospital Medical College, New York City, 1891; a practitioner of San Leandro and Haywards, Cal., died in the Southern Pacific Hospital, Sacramento, Cal., July 23, after a prolonged illness, aged 40.

Philip E. Blesch, M.D. Starling Medical College, Columbus, Ohio, 1868; one of the best-known German practitioners of Columbus, died at his home in that city, July 31, from diabetic gangrene, after an illness of five years, aged 62.

Robert Durham (Examination, Tenn., 1889); a practitioner of Sumner County, Tenn., for more than 40 years, died at his home in Pleasant Grove, June 11, from pulmonary abscess, after an illness of three weeks, aged 74.

Rudolph L. Dodge, M.D. Boston University School of Medicine, 1875; of Portland, Maine; a veteran of the Civil War, died suddenly from heart disease, while riding in his automobile near Pride's Corner, Maine, July 28, aged 66.

John R. Cottongim (License, Tenn., 1889); for 40 years a practitioner of Teague, Tenn.; died at his home in that place May 28, from cerebral hemorrhage, after an illness of more than a year, aged 67.

Kimber Charles Cleaver, M.D. Medico-Chirurgical College of Philadelphia, 1896; of Freidensburg, Pa., died in the Pottsville (Pa.) Hospital, July 18, after an operation for appendicitis, aged 37.

Fred Miller, M.D. Ohio Medical University, Columbus, 1902; once coroner of Tuscarawas County, Ohio, died suddenly at his home in Mineral City, Ohio, from cerebral hemorrhage, July 18.

James Turpin, M.D. Eclectic Medical Institute, Cincinnati, 1882; of Rockport, Ind.; one of the oldest practitioners of the state, died at his home in that city, July 22, aged 82.

Joseph Walter Lesslie, M.D. Toronto University Medical Faculty, 1880; of Toronto, died suddenly at his home in that city, July 17, from cerebral hemorrhage, aged 54.

John B. Summers, M.D. Bellevue Hospital Medical College, New York City, 1876; of Milton, Ind., died at his home in that place, July 17, after a long illness, aged 66.

Carl Gustav Tell, M.D. Homeopathic Hospital College, Cleveland, 1881; of Braddock, Pa., died at his home in that place, July 23, after a prolonged illness, aged 58.

William H. Hill, M.D. University of Louisville (Ky.), Medical Department, 1873; died at his home in Russellville, Ark., from heart disease, July 29, aged 56.

John S. McBean, M.D. Medical College of Ohio, Medical Department, University of Cincinnati, 1872; died at his home in Cadiz, Ohio, July 27, aged 67.

James David Hill, M.D. College of Physicians and Surgeons, San Francisco, 1900; died at his home in San Francisco, July 25, aged 38.

William T. Norris, M.D. Columbus (Ohio) Medical College, 1892; died at his home in East Liverpool, Ohio, July 30, aged 45.

Frank Leslie Hazlett, M.D. Jefferson Medical College, Philadelphia, 1903; of Butler, Pa., died near Parker, Pa., July 26, aged 29.

Belle A. Foote, M.D. Hahnemann Medical College and Hospital, Chicago, 1906; died at Richland, Iowa, July 11.

Death Abroad.

J. J. Grancher, M.D., of Paris, died July 13, 1907, at the age of 64, of a grippal pneumonia lasting only a few hours, although he had been engaged in a struggle against chronic disease for 35 years. He was admitted to the doctorate in 1873 and produced a thesis on the unity of tuberculosis opposing the doctrines of Niemeyer and others who at that time advocated the distinction of phthisis from tuberculosis. Grancher devoted much of his attention to the study of diseases of the lungs and especially tuberculosis in children. He assisted Pasteur in his researches on rabies, and it was to him that the first attempts at antituberculous vaccination were due. He was the first to describe the form of pneumonia known as "splenopneumonia," which has sometimes been called "Grancher's disease." While somewhat difficult of approach, he was of a generous disposition and identified himself with several philanthropic works. The most prominent of these was the work for the protection of childhood against tuberculosis by which he endeavored to save the healthy children of tuberculous parents from this plague. He was honored with election to the Academy of Medicine, and was a member of the consulting committee of hygiene of France, president of the administrative board of the Pasteur Institute, and commander of the Legion of Honor.

Queries and Minor Notes

CHAMPAGNE TABLETS.

BROOKLYN, July 28, 1907.

To the Editor:—Has the American Medical Association done anything with "Champagne Tablets," or can you tell me anything about them? From their action I think that they contain cocain.

LOUIS C. AGER, M.D.

ANSWER.—Champagne tablets were examined by the Massachusetts State Board of Health and each tablet was found to contain .05 gm., or nearly one grain, of caffein. They have not been investigated by the Council on Pharmacy and Chemistry.

ASKS ORIGIN OF DRAM AND OUNCE SYMBOLS.

Dr. E. H. Terrell, Richmond, Va., asks the origin of the symbols ʒ and ℥, and also of the symbol for a scruple.

RELATION OF ANTITOXIN TO DIPHTHERIA MORTALITY.

To the Editor:—I want any information you can give me on antitoxin, showing the number of cases treated with antitoxin and the number of deaths, and the same without antitoxin, especially in the recent Chicago epidemic. N. K.

ANSWER.—The second edition of Hare's "Practice of Medicine," 1907, gives some statistics on a large scale which may be useful. Roux compared the death rate of two large children's hospitals in Paris, one of which used antitoxin and the other did not. The mortality under antitoxin was 26 per cent., while at the same period the mortality without antitoxin was 60 per cent. From Oct. 1, 1894, serum therapy was practiced at the Hôpital Trousseau, with the result that at the end of two months the mortality had fallen from 60 per cent. to 14.85 per cent. Hare says (p. 183): "The largest and most valuable statistics are those of Bayeux, who collected more than 200,000 cases from all parts of the world and found that the average mortality rate was 16 per cent. Making a most conservative estimate of the general mortality of 35 per cent. in pre-antitoxin days, Bayeux's figures prove a reduction in mortality of more than 50 per cent. since the introduction of antitoxin. In the first nine years during which antitoxin was used in Chicago the mortality was 6.088, while during the nine years preceding the use of antitoxin the mortality was 11,488, a decrease of 47 per cent., although the population had increased nearly 600,000, or 52 per cent. If this increase in population is taken into consideration, the decrease in the mortal-

ity of this disease under this plan of treatment is 63 per cent. In New York City, out of 1,702 patients injected on the first day, including moribund patients, only 85 died—a case mortality of 4.09 per cent." The Chicago Health Department reports that it has no data on diphtheria treated without antitoxin, but gives the following information: At present very few cases of diphtheria in Chicago are treated without antitoxin at some time in the course of the disease. Sometimes there is a delay in administering antitoxin, as the deaths from the disease show. From Oct. 5, 1895, to Dec. 31, 1906, 8,372 cases of bacterially-verified diphtheria were treated with antitoxin by the Chicago Health Department, with the following results:

	INJECTION MADE ON					
	1st day.	2d day.	3d day.	4th day.	Later.	Totals.
Number cases treated....	624	2,181	2,926	1,578	1,063	8,372
Number deaths	2	33	99	176	234	544
Per cent. of deaths....	0.32	1.51	3.38	11.15	22.01	6.50*

* The average mortality per cent. of all cases is 6.50.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Aug. 3, 1907:

Eastman, Wm. E., asst.-surgeon, granted 30 days leave of absence with permission to apply for thirty days' extension.

Flagg, C. E. B., asst.-surgeon, leave of absence extended thirty days.

Wales, P. G., surgeon, relieved from duty at Fort Wayne, Mich., and ordered to Fort Apache, Ariz., for duty.

Field, Peter C., asst.-surgeon, will, on arrival at San Francisco, proceed to Fort Wayne, Mich., for duty at that station.

Davidson, W. T., asst.-surgeon., assigned to duty as surgeon of the transport *Logan* during voyage to Manila, sailing from San Francisco, Aug. 5, 1907. On arrival at Manila will report in person to the commanding general, Philippines Division, for assignment to duty.

Snoddy, C. A., asst.-surgeon, leave of absence on account of sickness, extended 30 days.

Halloran, P. S., asst.-surgeon, ordered to accompany Battery C, Fifth Field Artillery, to Fort Des Moines, Iowa, for duty during the Iowa Militia maneuvers, near Des Moines, Iowa, from Aug. 5 to 12, 1907.

Banta, W. P., asst.-surgeon, ordered to proceed from San Francisco to Fort D. A. Russell, Wyo., for station and duty.

Winter, F. A., surgeon, left post, Fort Myer, Va., Aug. 1, 1907, on 10 days' leave of absence.

Morris, E. R., surgeon, relieved from duty at Fort Logan, Colo., and on expiration of present sick leave, ordered to Fort Thomas, Ky., for duty.

Long, C. J., dental surgeon, relieved from duty at Fort Snelling, Minn., and ordered to San Francisco, to sail on first available transport for Philippine service.

Treuholtz, C. A., contract surgeon, granted leave of absence for two months.

Hereford, J. R., contract surgeon, ordered from Fort Oglethorpe, Ga., to his proper station, Fort Dade, Fla.

Ashburn, J. K., contract surgeon, granted leave of absence for ten days.

Roberts, E. E., contract surgeon, granted leave of absence for ten days.

Lemmon, Robt., contract surgeon, granted leave of absence for ten days.

Cullen, C. W., contract surgeon, ordered from Fort Sam Houston, Texas, to camp at Leon Springs, Texas, for duty.

Trotter-Tyler, George, contract surgeon, ordered from Fort Hamilton, N. Y., to Fort Adams, R. I., for duty.

Tetrault, C. A., contract surgeon, ordered from Southbridge, Mass., to San Francisco, to sail thence September 5 for Philippine service.

Rion, C. L., dental surgeon, ordered from San Francisco to Paris, Ky., for annulment of contract.

Navy Changes.

List of changes in the medical corps, U. S. Navy, for the week ending Aug. 3, 1907:

Bishop, L. W., P. A. surgeon, unexpired portion of leave revoked; ordered to the *Missouri* August 1.

Bunker, C. W. O., acting asst.-surgeon, ordered to the *Lancaster*.

Chappelear, F. D., acting asst.-surgeon, resignation accepted to take effect July 31, 1907.

Murphy, J. A., surgeon, detached from the *Des Moines* and ordered to the *Dolphin*.

Tolfree, H. M., P. A. surgeon, detached from the *Dolphin* and ordered to the *Des Moines*.

Alderman, C. G., asst.-surgeon, ordered to the Naval Hospital, Puget Sound, Washington.

Public Health and Marine-Hospital Service.

List of changes of stations and duties of commissioned and non-commissioned officers of the Public-Health and Marine-Hospital Service for the seven days ended July 31, 1907:

Banks, C. E., surgeon, leave of absence granted for one month from June 20, 1907, amended to read 28 days only.

Smith, A. C., surgeon, directed to proceed to Wheeling, W. Va., for special temporary duty, on completion of which to rejoin his station at Pittsburg.

Frick, L. D., P. A. surgeon, granted leave of absence for 7 days, from July 22, 1907, under Paragraph 191, Service Regulations.

Goldberger, Joseph, and McCoy, G. W., P. A. surgeons, directed to proceed to Brownsville, Texas, and other places in that portion of the state, for special temporary duty, on completion of which to rejoin their stations in Washington, D. C.

Warren, B. S., P. A. surgeon, relieved from duty at Boston and directed to proceed to Chicago, reporting to the medical officer in command for duty and assignment to quarters.

Trask, J. W., asst.-surgeon, detailed as recorder of board for completion of examination of applicants for entrance to the service, vice Joseph Goldberger, relieved.

Olsen, E. T., asst.-surgeon, granted leave of absence for 7 days, from July 26, 1907, under Paragraph 191, Service Regulations.

Olsen, E. T., asst.-surgeon, granted extension leave of absence for 7 days, from Aug. 2, 1907.

Stiles, Ch. W., chief Division of Zoology, Hygienic Laboratory, detailed to represent the service at the Seventh International Zoological Congress, to be held in Boston, Aug. 19-23, 1907.

Brinckerhoff, W. R., director Leprosy Investigation Station, Hawaii, detailed to represent the service at the Sixth International Dermatological Congress in New York, Sept. 9-14, 1907.

Spohn, A. E., acting asst.-surgeon, granted leave of absence for 30 days, from July 1, 1907, and excused for a further period of two months from the expiration thereof, without pay.

Townsend, F., acting asst.-surgeon, granted 7 days' leave of absence, from July 29, 1907.

Townsend, W., acting asst.-surgeon, granted extension leave of absence for 7 days.

BOARD CONVENED.

A board of medical officers was convened to meet at Chicago for the purpose of making a physical examination of an inspector of immigrants. Detail for the board: Surgeon G. B. Young, chairman; Acting Asst.-Surgeon William Kimmet, Acting Asst.-Surgeon J. J. Gerkin, recorder. July 25, 1907.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Aug. 2, 1907:

SMALLPOX—UNITED STATES.

California: San Francisco, July 13-20, 4 cases.
Illinois: Peoria, June 15-July 20, 10 cases.
Kentucky: Louisville, July 18-25, 2 cases.
Missouri: St. Joseph, July 13-20, 3 cases.
Ohio: Hamilton, March 31-June 15, 21 cases; Toledo, June 29-July 29, 6 cases.
Pennsylvania: Homestead, July 14-21, 1 case.
Texas: Houston, April 28-July 27, 50 cases, 1 death.
Virginia: Richmond, July 13-20, 1 case.
Wisconsin: Milwaukee, July 13-20, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, June 8-15, 2 cases.

SMALLPOX—FOREIGN.

Algeria: Algiers, June 1-30, 8 deaths.
Australia: Newcastle, May 1-31, 1 case.
Austria: Trieste, June 8-15, 1 case, 1 death.
Brazil: Para, July 6-20, 11 cases, 6 deaths.
Canada: Halifax, July 20-27, 1 case.
Chile: Iquique, June 30, present.
China: Amoy, June 22, present; Foochow, June 23-30, 1 case; Hankau, June 22-27, 1 case, 1 death; Hongkong, June 1-15, 6 cases, 5 deaths; Shanghai, June 23-30, 10 deaths (among natives); Tientsin, June 30, present.
Formosa: June 15-22, 1 case.
Germany: Königsberg, June 30-July 6, 1 case.
India: Bombay, June 18-25, 2 deaths; Calcutta, June 8-15, 20 deaths; Rangoon, June 8-15, 1 death.
Italy: General, July 4-11, 24 cases; Turin, June 30-July 7, 1 case, 1 death; Venice, June 29-July 6, 1 death.
Japan: Yokahama, June 17-24, 1 case.
Korea: Seoul, June 30, present.
Madeira: Funchal, July 7-14, 45 cases, 6 deaths.
Manchuria: Dalny, June 15-29, 4 cases, 1 death.
Mexico: Aguas Calientes, July 13-20, 7 deaths; City of Mexico, June 22-July 6, 18 deaths; Monterey, July 7-14, 1 death.
Portugal: Lisbon, June 29-July 13, 13 cases.
Russia: Moscow, June 15-29, 13 cases, 2 deaths; Odessa, June 29-July 6, 2 cases, 1 death; Riga, June 29-July 6, 1 case; St. Petersburg, June 22-29, 2 cases, 2 deaths.
Spain: Almeira, June 1-30, 8 deaths; Barcelona, July 1-10, 3 deaths; Cadiz, June 1-30, 5 deaths; Seville, June 1-30, 10 deaths; Valencia, June 30-July 7, 16 cases, 1 death.
Turkey: Bagdad, June 8-22, present.

YELLOW FEVER.

Brazil: Para, July 6-20, 8 cases, 6 deaths.

CHOLERA.

India: Bombay, June 18-25, 1 death; Calcutta, June 8-15, 37 deaths; Rangoon, June 8-15, 2 deaths.

PLAGUE.

Africa: King William's Town, June 8-15, 1 case.
Chile: Antofagasta, June 30, 9 cases, 2 deaths.
China: Hongkong, June 1-15, 28 cases, 24 deaths.
Egypt: Alexandria, June 27-July 1, 1 case; Assiout Province, June 27-July 1, 3 deaths; Behara Province, June 27-July 1, 5 cases; 4 deaths; Beni Souef Province, June 27-July 1, 1 case, 1 death; Minieh Province, June 27-July 1, 1 case.
India: Bombay, June 18-25, 16 deaths; Calcutta, June 8-15, 62 deaths; Rangoon, June 8-15, 68 deaths.
Japan: Formosa (Island), June 15-22, 124 cases, 111 deaths; Tokyo, July 6, 2 cases, 1 death; Yokahama, July 6, 2 cases in suburbs.
Mauritius: Port Louis, April 1-30, 3 cases, 3 deaths.
Peru: Callao, June 13, 1 case; Chiclayo, June 13, 1 case, 1 death; Mollendo, June 13, 1 case, 1 death; Paita, June 13, 1 case; Trujillo, vicinity of, June 13, present.

Association News

Davis Memorial Fund.

Dr. Henry O. Marcy, chairman of this fund, asks that the following list of contributors be published as the contribution from Massachusetts:

Massachusetts Med. Society.	$300	Dr. Robert W. Lovett....	$ 5
Dr. Henry O. Marcy.....	100	Dr. George B. Shattuck ...	5
Dr. Herbert L. Burrell.....	25	Dr. Theobald Smith	5
Dr. James B. Ayer.....	10	Dr. John E. Somers	5
Dr. Clarence J. Blake.....	10	Dr. A. O. Squier	5
Dr. Richard C. Cabot	10	Dr. William D. Swan.....	2
Dr. Thomas E. Cunningham	10	Dr. George W. Gay	1
Dr. Reginald W. Fitz	10	Dr. E. G. Cutler	5
Dr. Joel E. Goldthwait	10	Dr. A. P. Clarke	5
Dr. Francis B. Harrington.	10	Dr. A. T. Cabot	5
Dr. James J. Putnam	10	Dr. John C. Munro	10
Dr. Maurice H. Richardson.	10	Dr. George H. Monks.....	10
Dr. Frederick C. Shattuck..	10	Dr. Morton Prince	5
Dr. Edmund H. Stevens....	10		
Dr. John Collins Warren...	10		
Dr. John A. Gordon	5	Total	$618

NEW MEMBERS.

List of new members of the American Medical Association for the month of July, 1907:

ALABAMA.

Dunster, W. R., Florence.
Elkourie, H. A., Birmingham.
Gibbs, E. T., Birmingham.
Stansberry, C. L., Bessemer.

ARKANSAS.

Duckworth, G. M., Pine Bluff.
Hall, B. A., Pine Bluff.
Haltom, W. C., Jonesboro.
Kirby, H. H., Harrison.
Knott, A. D., Grayette.
Murphy, F. T., Brinkley.
Williams, H. E., Pine Bluff.

CALIFORNIA.

Earing, E. W., San Francisco.
Herzog, G. K., San Francisco.
Parks, J. A., San Diego.
Phillips, W. A., Santa Cruz.
Tuckerman, W. C., Kennett.

COLORADO.

Aberg, Axel, Idaho Springs.
Crook, W. W., Glenwood Springs.
Fowler, C. C., Denver.
Jones, S. F., Denver.
Kent, W. C., Denver.
Matlock, J. A., Longmont.
Parker, O. T., Salida.
Trueblood, Chas., Monte Vista.
Wescott, O. D., Denver.

CONNECTICUT.

Barnes, F. H., Stamford.
Davenport, Annabella K., Hartford.
Willard, F. B., Hartford.

DISTRICT OF COLUMBIA.

Parker, H. P., Washington.
Perkins, W. R., Washington.

FLORIDA.

Cunningham, L. W., Jacksonville.
Warren, W. R., Key West.

GEORGIA.

Bailey, T. S., Newnan.
Barge, J. L., Newnan.
Carlton, W. A., Athens.

ILLINOIS.

Barnes, E. M., Chicago Hgts.
Bartlett, J. D., Chicago.
Blender, Wm., Carthage.
Floyd, T. W., Peoria.
Fortune, H. C., Literberry.
Geiger, L. H., Gilman.
Irish, H. E., Chicago.
Johnson, A. C., Newark.
Lawler, T. A., Taylorville.
Little, R. M., E. St. Louis.
Loeb, L. M., Chicago.
Lofgren, Emil, Rockford.
Miller, I. M., Chicago.
Montgomery, C. C., Lincoln.
Nelms, C. O., Herscher.
Schmidt, C. H., Chicago.
Speed, Kellogg, Chicago.
Stanley, O. O., Urbana.
Titterington, M. B., Jerseyville.

INDIANA.

Caffee, A. H., Terre Haute.
Combs, A. H., Indianapolis.
Field, W. H., Evansville.
Frazer, Chas., Muncie.
Hollingsworth, M. P., Princeton.
Shonkwiler, Jos., Rockville.
Thompson, H. J., La Porte.

INDIAN TERRITORY.

Hawley, S. De Zell, Tulsa.
Holland, J. L., Madill.
Hottle, W. C., Paoli.

IOWA.

Kyle, W. S., Diagonal.
Lowry, N. J., Ely.
McWilliam, C., Ames.
Osborn, W. S., Knoxville.
Winsett, C. V., Princeton.

KANSAS.

Beckner, E. D., Hoxie.
Bostwick, W. H., Cedar.
Boswell, J. H., Baxter Springs.
Clark, F. P., Kansas City.
Hammel, S. A., Topeka.
Jacquith, J. H., Council Grove.
Rogers, A. H., Altoona.
Smith, D. M., Argentine.
Warner, T. W., Parker.

KENTUCKY.

Bateman, C. H., Bradfordsville.
Burnett, E. D., Louisville.
Crume, S. M., Fox Creek.
Green, Winnifred, Louisville.
Hanes, G. S., Louisville.
Kieffer, F. J., Louisville.
Kremer, J. W., Louisville.
McKinley, I. H., Winchester.
Morton, D. C., Louisville.
Oblinger, F. V., Catlettsburg.
Simon, W. F., Louisville.

LOUISIANA.

Block, W. H., New Orleans.
Faulk, R. W., Monroe.
Mohler, D. A., Shreveport.
Norwood, T. S., Torras.
Rector, J. M., Collinston.
Watkins, T. H., Lake Charles.

MARYLAND.

Hemmeter, G. W., Baltimore.
Steuart, C. C., Baltimore.
Stiefel, J. G., Baltimore.
Stoncipher, Claude, Baltimore.

MASSACHUSETTS.

Ascher, Joseph, Boston.
Barnes, F. J., Cambridge.
Bushold, F. G., Lawrence.
Cyr, E. E., Lawrence.
Gage, F. L., No. Chelmsford.
Goldthwaite, R. H., Worcester.
Hartwell, H. F., Boston.
Holtt, C. L., Lynn.
Jackson, J. P., Fall River.
Packard, Horace, Boston.
Park, F. E., Stoneham.
Phillips, W. F., Boston.
Reed, V. A., Lawrence.
Shohan, Jos., Boston.
Smith, T. D., Boston.
Sullivan, C. B., Hathorne.
Thayer, Eugene, Boston.
Walch, J. F., Lawrence.

MICHIGAN.

Brady, E. J., Kalamazoo.
Burgess, C. G., Detroit.
Cole, H. S., South Range.
Gregory, M. S., Travers City.
Huntley, F. M., Manton.
McIntyre, C. S., Woodland.
Robinson, A. L., Allegan.
Roth, Paul, Battle Creek.

MINNESOTA.

Bergroth, E., Duluth.
Carson, J. H., Duluth.
Chapple, C. L., Rochester.
Eustis, W. C., Owatonna.
Fleming, A. S., Wheaton.
Freligh, E. O. B., Stillwater.
Heyerdale, O. C., Rochester.
Hielscher, J. A., Mankato.
Jones, A. W., Red Wing.
Linton, Laura A., Rochester.
Mathisen, G. B., Evansville.
McKeon, Owen, St. Paul.
Nicholson, Jos., Brainerd.
Ogden, B. H., St. Paul.
Pratt, W. H., Stillwater.
Tilderquist, D. L., Duluth.
Warren, F. S., Faribault.
Wedge, A. C., Albert Lea.
Wellner, G. C., Red Wing.
Wilson, W. F., Lake City.
Wylie, A. R. T., Faribault.

MISSISSIPPI.

Alexander, A. P., Sledge.
Arnold, W. H., Eupora.
Berryhill, W. A., Eupora.
Finch, L. W., Eupora.
Glass, H. D., Lambert.
Halbert, F. M., Greenville.
Small, H. J., Winona.
Wasson, U. S., Moorhead.

MISSOURI.

Baird, J. P., Marionville.
Berry, G. F., Kansas City.
Bogart, T. N., Excelsior Springs.
Briggs, Waldo, St. Louis.
Campbell, A. V., St. Louis.
Cape, L. W., Maplewood.
Clausen, J. J., Kansas City.
Finley, F. L., Anniston.
Godfrey, G. B., St. Louis.
Graul, R. E., St. Louis.
Grindan, Joseph, St. Louis.
Gwinn, G. E., Bethany.
Holley, A. E., St. Joseph.
Johnson, G. L., Kennett.
Klinefelter, M. L., St. Louis.
Kuhlmann, F. C. E., St. Louis.
Luten, J. B., Caruthersville.
McKim, H. W., Labelle.
Munson, C. L., St. Louis.
Myerdick, A. H., St. Louis.
North, W. R., Labaddie.
Ogilvie, F. L., Blodgett.
Owens, N. O., Lagrange.
Patton, C. W., Sampsell.
Richey, L. A., Fairport.
Robinson, A. C., St. Louis.
Wallace, J. S., Brunswick.

MONTANA.

Brice, J. T., Lewistown.

NEBRASKA.

Burchard, C. T., Falls City.
Fritschel, G. C., So. Auburn.
Nielsen, Morris, Belden.

NEW JERSEY.

Barbash, Samuel, Atlantic City.
Burnett, H. J., Montclair.
Carroll, A. J., Morris Plains.
Dyer, Florence A., Riverton.
Freeland, Frank, Maywood.
Koch, G. J., Paterson.
Levy, Julius, Newark.
Stahl, Alfred, Newark.
Teimer, Theodore, Newark.
Taylor, W. A., Trenton.

NEW MEXICO.

Field, W. C., Las Cruces.
Frush, H. L., Watrous.

NEW YORK.

Agostini, V. D., New York.
Barnes, E. A., Plattsburgh.
Baker, J. L., Brooklyn.
Bellows, L. W., Waterloo.
Bookman, Arthur, New York.
Brown, Ethel D., New York.
Brown, J. R., Seward.
Bugbee, H. G., Poughkeepsie.
Bumster, P. H., Long Island City.
Byrne, J. H., New York.
Coopernail, G. P., Bedford.
Coughlin, J. H. F., Troy.
Doty, G. E., New York.
Ernst, P. H., New York.
Ferguson, J. Bruce, New York.
Foskett, Eben, New York.
Fowler, P. Van B., New York.
Frederickson, Victor, New York.
Ginnasi, Francis, New York.
Goodman, Charles, New York.
Hare, G. R., New York.
Hawkins, N. L., Watertown.
Higgins, J. J., New York.
Hoke, F. C., New York.
Hunt, E. L., New York.
Knight, C. A., Peekskill.
Lee, B. J., New York.
Lipset, L. J., New York.
Lloyd, H. W., New York.
Lotz, G. C., New York.
Mabbott, J. M., New York.
Meacham, Leslie, New York.
Meyers, R. E., Tottenville, L. I.
Miller, F. M., Utica.
Morrill, J. L., New York.
Mowry, E. C., New York.
Nicoll, M., Jr., New York.
Osgood, Chas., New York.
Oyler, W. H., New York.
Pamenter, L. A., Corinth.
Phillips, B. G., New York.
Pierce, Eudora, Brooklyn.
Plummer, H. E., New York.
Preston, H. F., Utica.
Pryor, J. H., Buffalo.
Quinlan, T. F., New York.
Robinson, R. W., Auburn.
Schott, Max, New York.
Slote, S. H., Brooklyn.
Stapleton, E. A., Johnstown.
Stark, M. M., New York.
Thomson, J. J., New York.
Tedford, R. H., Jr., Albany.
Torek, Franz., New York.
Wallace, Charlton, New York.
Weinstein, Harris, New York.

NORTH CAROLINA.

Carr, J. R., Durham.
Jordan, W. S., Fayetteville.
Rodman, J. C., Washington.
Stevens, R. S., Raleigh.

NORTH DAKOTA.

McNamara, C. J., Barlow.

OHIO.

Bird, C. W., Continental.
Darby, J. C., Cleveland.
Ellsworth, W. O., Autinbury.
Evans, J. B. K., McGuffey.
Gabriel, S. S., Lockington.
Harris, H. L., Columbus.
Howell, C. A., Columbus.
May, E. S., Cincinnati.
Marine, David, Cleveland.
Phillips, John, Cleveland.
Pirrung, J. E., Cincinnati.
Shepard, C. J., Columbus.
Sidle, C. D., Convoy.

OKLAHOMA.

Baker, R. C., Granite.
Dail, A. W., Cement.
Roberson, J. F., Duncan.
Sloan, E. N., Kingfisher.
Stiles, N., Medford.
Walker, J. D., Caney.
Wolff, L. G., Okarche.

PENNSYLVANIA.

Boyd, J. M., Walnut Bottom.
Campbell, M. D., Plumville.
Condon, W. J., Susquehanna.
Cope, T. A., Philadelphia.
Hannan, C. E., Johnstown.
McGinty, E. F., Pittston.
McKee, J. H., Philadelphia.
Scott, W. McC., Black Lick.
Settle, G. M., Norristown.
Shammo, G. C., Philadelphia.
Wilson, A. R., Monessen.
Wright, W. E., Harrisburg.

SOUTH CAROLINA.

Rosser, H. E., Westminster.

SOUTH DAKOTA.

Baldwin, F. M., Ashton.

TENNESSEE.

Sanders, E. M., Nashville.

TEXAS.

Adair, C. C., Bailey.
Angier, E. L., Huntsville.
Aycock, R. F., Rosebud.
Brown, W. E., Merkel.
Copenhaver, J. E., Aubrey.
Copeland, H. V., Grand Prairie.
Crook, W. J., Cooper.
Davis, W. H., Arlington.
Dunn, J. F., Barelson.
Eargle, H. C., Lingleville.
Earthman, H. W., Conroe.
Freeman, Wm., Pottsboro.
Givens, J. M., Fort Worth.
Gordon, E. C., Brownwood.
Halliburton, B. S., Devine.
Harlan, W. J., Bartlett.
Hayes, M. A., Lott.
Hindman, E. C., Howland.
Horney, H., Van Alstyne.
Horton, R. W., Ottine.
Jones, A. F., Colorado.
Jones, G. M., Taylor.
Kimble, E. W., Gorman.
Kimmins, R. L., Iredell.
King, F. B., Houston.
Maynard, G. P., Cullioka.
McKissick, J. F., Arlington.
McMickin, Dru., Kirbyville.
McNeill, W. T., Valley Mills.
Milton, Solon, Ft. Worth.
Morgan, T. B., Bronson.
Mullins, W. C., Fort Worth.
Mulloy, J. J., Dublin.
Ory, Charles, Comanche.

Payne, J. E., Grand Prairie.
Powell, R. G., Baird.
Puckett, Ezra, Henrietta.
Rhoads, H. H., Vernon.
Ricks, G. N., Pleasanton.
Rice, S. P., Martin.
Rushing, F. E., Mineral Wells.
Rutledge, W. C., Denison.
Shepard, O. H., Morgan Mill.
Smith, S. W., Denison.
Throckmorton, B. E., McKinney.
Townes, J. M., Naples.
Weaver, T. P., De Leon.
Wiley, T. W., McKinney.
Williamson, C. D., Sacul.
Wynn, T. F., Denison.

VIRGINIA.

Cooke, R. P., Riverton.
Harnsberger, Stephen, Catlett.
Kagey, T. J., Newport News.
Leake, L. K., East Leake.
McCue, F. C., Charlottesville.
Miller, R. W., Barton Heights.
Powell, Llewellyn, Alexandria.
Rawls, J. L., Norfolk.
Renn, G. A., Norfolk.
Snipp, J. B., Norfolk.
Winn, J. F., Richmond.

WEST VIRGINIA.

Arnold, J. R., Hurricane.
McCarty, J. L., Berwind.
MacQueen, G. A., Charleston.
Spangler, C. W., Jared.
Roller, R. D., Jr., Wittenberg.
Stewart, W. De Witt, Moundsville.

WISCONSIN.

Carey, G. H., Marrill.
Daly, F. P., Reedsburg.
Epley, F. W., New Richmond.
Fox, P. A., Beloit.
Garner, C. E., Linden.
Giesen, C. W., Superior.
Henke, W. A., Tomah.
Howison, N. L., Menomonie.
Jones, D. T., Wausau.
Koch, A. T., Wausau.

Medical Education and State Boards of Registration

North Dakota Adopts Higher Requirements.—At a recent meeting of the State Board of Medical Examiners of North Dakota it was voted that graduates of 1910 and thereafter, to secure license to practice medicine and surgery in North Dakota, must have had preliminary education equal to the standard adopted by the University of North Dakota, to-wit: In addition to a high school diploma two years' work in a college of liberal arts, having a standard equal to that of the University of North Dakota.

Reciprocity in North Dakota.—Reciprocity, on the basis of an examination, has been established by North Dakota with Illinois, Iowa, Maine, Michigan, Vermont, West Virginia, Wisconsin and Wyoming.

California Board Wins Case.—In the case before the Supreme Court recently of James T. Arwine vs. the Board of Medical Examiners of the State of California, wherein the plaintiff asked for a writ of mandamus compelling the board to recognize his medical diploma, issued by the Medical Department of the University of the South, Sewanee, Tenn., the court refused the writ, thus reversing the decision of the Appellate Court. This decision was rendered in the absence of proof that the requirements of the Medical Department of the University of the South were in no particular less than those prescribed by the Association of American Medical Colleges for the year diploma was granted.

The Carnegie Foundation.—The first annual report of the Carnegie Foundation for the Advancement of Teaching is at hand and gives some interesting information as to the action of the institution in providing pensions for retiring teachers. Fifty-two institutions have been placed on the accepted list; of these Massachusetts has 11; New York, 11; Pennsylvania, 4; Ohio, 4; Wisconsin, 3; Connecticut, 2; New Jersey, 2; Vermont, 2; California, 1; Colorado, 1; District of Columbia, 1; Illinois, 1; Indiana, 1; Iowa, 1; Louisiana, 1; Maryland, 1; Minnesota, 1; Missouri, 1, and New Hampshire, 1. Two of the recognized colleges are in Canada. It is interesting to note that no other state west of New England has more than one except Wisconsin, which is accredited with 3, and that there is only one college recognized in the far South. The 52 institutions contain in their faculties 257 persons eligible to retirement with pensions, of whom 46 accepted retiring allowances. The age for retirement is fixed by the institution to which the professor belongs, but there seems to be a tendency to fix a definite age, probably 65, at which the teacher is expected to retire and after which he shall be kept in active service only by special vote of the trustees of the institution.

Probably the most valuable service rendered by the foundation is the educational standard fixed for determining the eligibility of an institution to receive the benefits of the institution and which tends to determine in an authoritative manner the rank of American institutions claiming the title of college or university. The educational standard adopted by the foundation is as follows: "An institution, to be ranked as a college, must have at least six professors giving their entire time to college and university work, a course of four full years in liberal arts and sciences, and should require for admission not less than the usual four years of academic or high-school preparation, or its equivalent, in addition to the pre-academic or grammar school studies. A technical school, to be eligible, must have entrance and graduation requirements equivalent to those of the college and must offer courses in pure and applied science of equivalent grade. To be ranked as a college, an institution must have a productive endowment of not less than two hundred thousand dollars."

That portion of the standard relating to preliminary education will be an added influence toward the establishment of four-year high schools, which are much needed in a number of states.

Texas April Report.—Dr. T. T. Jackson, secretary of the Board of Medical Examiners for the State of Texas, reports the written examination held at Austin, April 30-May 2, 1907. The number of subjects examined in was 12; total number of questions asked, 150; percentage required to pass, 75. The total number of candidates examined was 116, of whom 83 passed, including 3 non-graduates, and 33 failed, including 24 non-graduates. The following colleges were represented:

College.	Year Grad.	Per Cent.
PASSED.		
George Washington University	(1906)	84.
Columbia University, Washington	(1899)	81.8
Rush Medical College	(1907)	80.2
Jenner Medical College	(1902) 75.5; (1906)	80.5
Northwestern Univ. Med. School	(1896) 78.8; (1898)	80.5
Indiana Medical College	(1907)	82.6
University of Iowa	(1902)	83.1
University of Louisville	(1906)	77.5
Kentucky School of Med.	(1898) 82.3; (1906)	77.
Louisville Medical College	(1905)	75.
University of Michigan	(1898) 81.2; (1906)	89.5
St. Louis Coll. of P. and S.	(1906) 75.8; (1907)	75.
Missouri Medical College	(1899)	75.
Barnes Medical College	(1899)	75.
University Medical College, Kansas City, (1899) 78.8; (1906) 79.3; (1907) 78.9.		
Washington University, St. Louis	(1906)	84.5
University of Buffalo	(1892)	76.2
Ohio Medical University	(1904)	75.3
Western Reserve University	(1901)	86.1
Southwestern University Med. Coll., Dallas, (1907) 75.7, 77.2, 79.7, 78.9, 79.5, 80.4, 80.8, 93.7.		
Ft. Worth University, (1906) 82.7; (1907) 75, 75.3, 76.7, 77.9, 80, 80.4, 80.7.		
University of Texas	(1906) 75; (1907)	81.4, 84.9
Baylor University, (1904) 83.2; (1907) 75, 75, 75, 75.7, 83, 83.2, 87.4		
University of Nashville	(1902) 77.2; (1904) 80; (1907)	76, 77.2
Memphis Hospital Med. Coll., (1905) 78.3; (1906) 76.3; (1907) 75.4, 76.2, 78, 79.3, 79.4, 78.8, 85.3.		
Tulane University of Louisiana (1906) 81.7, 76; (1907) 75.7, 77.1, 79.9, 81.4, 83.7.		
Meharry Medical College	(1907)	76.6, 78.2
Vanderbilt University	(1881) 79.1; (1905) 84.3; (1906)	81.8
University of the South	(1906)	85.
University of Tennessee	(1905)	75.
FAILED.		
Harvey Medical College	(1899)	60.4
Eclectic Med. Univ., Kansas City	(1906)	41.4
Kansas City Med. College	(1903)	52.
Missouri Medical College		*8.8
Gate City Medical College	(1907)	67.5
Ft. Worth University	(1907)	68.5
Baylor University	(1907)	61.6
Meharry Medical College	(1907)	66.9, 71.

*Year of graduation not given.

The following questions were asked:

ANATOMY.

1. Describe the inferior maxillary bone. 2. Describe the internal abdominal ring. 3. Name the openings through which the cranial nerves pass from the cranial cavity. 4. Describe the relations of the femoral artery and name its branches. 5. Describe the duodenum. 6. What is the difference between the dura mater and the pia mater? 7. Describe the cross section of the spinal cord in the cervical region. 8. What nerve supplies the extensor muscles of the fore arm? 9. Which ribs mark the lower border of the lungs in the axillary region and dorsal region? 10. Describe the gross anatomy of the kidney. 11. Outline the external jugular vein. 12. Describe the tonsils. Answer any ten questions.

HISTOLOGY.

1. Give the minute anatomy of the arachnoid membrane. 2. Describe the pia mater. 3. Describe the neurilemma. 4. Of what structure is nerve tissue composed? 5. Describe the conjunctiva histologically. 6. In brief, mention the structures of the iris. 7. What structure gives color to the eyes, as when we speak of "blue eyes," "grey eyes," "black eyes," etc? 8. Divested of its covering, what tissues compose the tongue? 9. Give minute structure of the esophagus. 10. What is the structure of the true vocal cords? 11. What is the structural difference between skin on the palm of the hand and that on the dorsal surface? 12. Give the minute anatomy of a secreting gland. Answer any ten questions.

PHYSIOLOGY.

1. Name the varieties of connective tissue. 2. What are the manifestations of cell life? 3. What is the function of the nervous system? 4. Describe the structure of nerve trunks. 5. Give the physiologic properties of muscle. 6. Describe the digestive apparatus. 7. Describe intestinal digestion. 8. How do the products of digestion find their way to the venous blood? 9. State the physical and chemical properties of the blood. 10. Describe the physiologic anatomy of the heart. 11. What physiologic process takes place in the capillaries? 12. What are the various functions of the liver? Answer any ten questions.

CHEMISTRY.

1. How is chlorin prepared? 2. What is understood by the term chemical formula? 3. Complete the following: $CaCO_3 + 2HCl =$ 4. What is the difference between quick lime and slacked lime. 5. What is the test for lead in drinking water? 6. Mention the chemical and physical properties of phosphorus. 7. Give two tests for sugar in the urine. 8. Give two tests for albumin in the urine. 9. What is the antidote for carbolic acid? 10. Mention three chief adulterants added to milk for its preservation. 11. What is a radicle? 12. Give atomic weight and valence of Hg, Pb, Ag and O. Answer any ten questions.

PATHOLOGY.

1. How does the morbidity of smallpox differ from that of measles? 2. Mention some lesions peculiar to scarlet fever. 3. What apparent differences in throat lesions in diphtheria and follicular tonsilitis? 4. Mention some pathologic lesions that are sometimes the sequelæ of diphtheria. 5. What constitutes the difference between laryngeal or true croup, and spasmodic croup? 6. Mention the usual pathologic progression in pulmonary tuberculosis. 7. What pathologic condition in the lung corresponds to tubular respiration? 8. Grossly speaking, what morbid conditions in the lung would you expect to find when large moist râles are heard on auscultation? 9. Mention difference between embolism and thrombus. 10. What would be the probable result of embolism in the brain? 11. How may you distinguish the morbid condition in cerebral hemorrhage from embolism in the brain by the symptoms? 12. What are the most common causes of dropsical effusions into abdominal cavity? Answer any ten questions.

MATERIA MEDICA AND THERAPEUTICS.

1. What class of acids would you give (internally) to acidify alkaline urine? 2. What is the dose of carbolic acid for internal administration? What are the chemical antidotes for carbolic acid? 3. Mention the antagonists of cocain. 4. How do salines produce catharsis? 5. What is the proportion of mercury in hydrargyrum cum creta; what is the dose? 6. Give the chemical name and dose of (a) epsom salt, (b) rochelle salt, (c) glauber salt, (d) cream of tartar. 7. What is the physiologic effect of cocain on (a) the ocular conjunctiva, (b) the pupil of the eye, (c) and the salivary glands? 8. What is the adult dose of (a) hyoscin hydrobromate, (b) apomorphia, (c) morphia sulphate, (d) pilocarpin? 9. On what chemical change in the intestinal tract does the purgative action of castor oil depend? 10. What effect has pilocarpus on the heart, on the skin and on the salivary glands? 11. Name the ingredients of (a) Fowler's solution, (b) Donovan's solution, (c) Mensell's solution. 12. Name two local and two systemic emetics and give the dose of each. 13. How do strophanthus and digitalis differ in their physiologic action; name the dose of the tincture of each according to the new pharmacopeia. 14. What is the effect of adrenal extract on (a) the heart, (b) the arterioles? 15. Name a drug which causes dilatation of the pupil of the eye when taken internally and one when applied locally. Name a drug which causes contraction of the pupil of the eye when taken internally and one when applied locally. 16. Give the composition and state the dose of Dover's powder. 17. State the composition and dose of pulvis jalapæ compositus. 18. How should poisoning by coal gas—illuminating gas—(carbonic oxid) be treated? Answer any fifteen questions.

MEDICAL JURISPRUDENCE.

1. What do you understand by civil malpractice and criminal malpractice? 2. What is the value of a dying declaration in court and what should be observed by the physician at the time same is given? 3. What do you understand by a coroner's inquest? 4. How would you determine whether a person found dead had committed suicide or was murdered? 5. From a medicolegal standpoint what would you do if called to see a patient before death who was suspected to have been poisoned? 6. If called to view the body of an infant, how would you determine whether it was born dead or had lived after its birth? 7. Mention a few symptoms that would lead you to suspect sanity in a criminal. 8. Give some general rules to be observed in giving expert testimony. 9. What do you understand by the term "medical expert witness." 10. What do you undertsand by personal identity? 11. If called to view the remains of a person at the place found dead relate briefly what you would do. 12. Give very briefly how you would hold a postmortem on a person found dead. Answer any ten questions.

HYGIENE.

1. Name two diseases communicated to man solely by the mosquito and name the mosquito responsible for each disease? 2. What is the minimum number of cubic feet of air space that should be allowed to each patient in a hospital? 3. How would you instruct a family to fumigate a room after continuous use by a tuberculosis patient for some time? 4. What steps should be taken by the state authorities to prevent the spread of tuberculosis throughout the state? 5. What steps should be taken by the proprietors of hotels and boarding-houses located in health resorts to prevent communication of tuberculosis to uninfected guests? 6. In what way is typhoid fever most frequently communicated from one person to another? 7. How would you prevent the spread of yellow fever? 8. Give your method of handling a diphtheria case in a family of children? 9. Name some of the organic and inorganic matters which may render drinking water unwholesome? 10. If consulted relative to the management of a school, what instructions would you give relative to age for children to enter, hours of study and exercise? 11. Referring to question next above, what instructions would you give relative to light, heat and ventilation? 12. In an epidemic of scarlet fever what requirements would you adopt before permitting infected children to return to school? Explain in detail. Answer any ten questions.

PRACTICING MEDICINE.

1. What is stomatitis? Name the various forms and outline the treatment. 2. Give cause, symptoms and treatment of uremia. 3. Give the different types of malarial fever and treatment appropriate to each. 4. Give the causes and diagnosis of gastric hemorrhage and treatment. 5. Describe the different valvular diseases of the heart and treatment. 6. Give the causes and treatment of incontinence of urine in children. 7. What is cholera infantum? Give cause and treatment. 8. What conditions produce edema? 9. Mention the early signs of phthisis pulmonalis. 10. Outline treatment of acute nephritis. 11. Name the different forms of dysentery. 12. What is ophthalmia neonatorum? Give cause and treatment. Answer any ten questions.

SURGERY.

1. What is the diagnosis and treatment of empyema? 2. How would you treat osteomyelitis of the tibia? 3. What are the characteristics of the initial lesion of syphilis? 4. What do you regard as the best antiseptic solution for general external use? 5. Describe how you would cut your flaps for amputation of forearm. 6. What tumors are most commonly found in the female breast? 7. How would you treat an extensive burn of the first and second degree on the body? 8. What are the symptoms of strangulated inguinal hernia? 9. What measures would you use to combat surgical shock? 10. What permanent dressing would you apply to a simple fracture of the leg at the junction of the lower and middle thirds? 11. What are the best local anesthetics, and in what strength and how would you apply them? 12. What dressing would you apply to a sprained ankle? Answer any ten questions.

EYE, EAR, NOSE AND THROAT.

1. How would you treat ophthalmia neonatorum? 2. What is the treatment of iritis? 3. What are the post-nasal adenoids and what the treatment? 4. What are the symptoms of pus in the antrum? 5. What are some of the most important results of middle ear disease? 6. What are the important sequelæ of diphtheria? Answer any five questions.

OBSTETRICS.

1. What influence does pregnancy have on a tuberculous woman? 2. What changes occur in the nervous system during pregnancy, and what are the symptoms? 3. Give the diagnosis of a fetus dead in utero and the treatment of such condition. 4. Describe the present aseptic method of the conduct of labor, including delivery of afterbirth. 5. Give the diagnosis, dangers and treatment of retained placenta and membranes. 6. What means are used to prevent puerperal infection in private practice? 7. Through what channels are septic germs liable to penetrate, and what conditions of the tissues facilitate their entrance? 8. (a) State what varieties of mental disease occur in the so-called puerperal insanity; (b), give causes and symptoms; (c), give the prognosis treatment. 9. What are the chief points of medicolegal interests in puerperal insanity? 10. Give the definition, causes, premonitory symptoms and treatment of eclampsia. 11. (a) What are the indications for the induction of premature labor? (b) Describe the operation. 12. Give the etiology, symptoms and treatment of cystitis in the puerpera state. Answer any ten questions.

GYNECOLOGY.

1. What do you mean by the terms amenorrhea and dysmenorrhea and give treatment in each case? 2. Give the pathology, symptoms and treatment of acute endometritis. 3. Describe the anatomy and uses of round ligaments. 4. Describe in detail your treatment of extreme retroversion of the uterus. 5. Under what conditions would you operate for carcinoma of the cervix uteri? 6. Give the symptoms and treatment for pelvic abscess. 7. What are the causes of pelvic abscess? 8. What dangers arise from delayed appropriate treatment of pelvic abscess? 9. Give in detail steps of a good operation for repair of the perineum? 10. What tissues are torn in complete laceration of the perineum extending two inches up the rectum? 11. What are the objections to tapping an ovarian cyst? 12. What complications may arise from gonorrhea in the female? Answer any ten questions.

Florida May Report.—Dr. J. D. Fernandez, secretary of the Florida Board of Medical Examiners, reports the written examination held at Jacksonville, May 15-16, 1907. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 41, of whom 39 passed and 2 failed. The following colleges were represented:

PASSED. College.	Year. Grad.	Per Cent.
University of Arkansas	(1905)	86
Atlanta Co'l. of P. & S.	(1906) 91.4; (1907) 78.2, 79, 85, 89.2,	98.
Atlanta School of Medicine	(1907)	83.4
Northwestern University	(1905)	94.8
College of P. and S., Chicago	(1902)	95.1
Howard University, Washington	(1894)	77.8
Hospital Coll. of Med., Louisville	(1902)	84.5
Barnes Med. Coll., St. Louis	(1895)	92.5
University of Missouri	(1904)	84.4
College of P. and S., New York	(1874) 90.4; (1888)	86.
Cornell University	(1903)	80.
Miami Medical College	(1906	87.7
Medical College of Ohio	(1897) 97; (1902)	89.5
University of Pennsylvania	(1903)	95.4
Eclectic Med. Institute, Cincinnati	(1907)	90.
Leonard Medical School	(1907) 79.1,	82.7
University of the South	(1906) 85.1,	94.7
Memphis Hospital Med. Coll.	(1902)	81.7
Meharry Med. Coll., (1905) 75; (1907) 75, 82.7, 83.7, 85.4, 84.7,		87.5
Chattanooga Medical College	(1907) 88,	90.
Medical Coll. of South Carolina	(1901)	88.1
University of Vermont	(1904)	88.7
University of Havana, Cuba	(1891)	86.5

FAILED.		
*Atlanta Medical College	(1894)	50.4
University of Tennessee	(1899)	70.

*This school united with Southern Medical College in 1898 to form Atlanta College of Physicians and Surgeons.

Iowa May and June Reports.—Dr. Louis A. Thomas, secretary of the Iowa State Board of Medical Examiners, reports the written examinations held at Keokuk, Iowa City and Des Moines, May 7-9, June 5-7, and June 11-13, 1907, respectively. The number of subjects examined in was 20; total number of questions asked, 100; percentage required to pass, 75.

At the examination held at Keokuk May 7-9, the total number of candidates was 31, of whom 28 passed and 3 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Keokuk Med. Coll., College of P. and S., (1906) 76; (1907) the grade of 75 was reached by three, 77 by one, 78 by two, 79 and 80 by one each, 81 by two, 82 by four, 83 and 84 by one each, 85, 86 and 87 by two each, 88 and 89 by one each, 90 by two, and 94 by one.		

FAILED.

Keokuk Med. Coll., College of P. and S., (1904) 66; (1907) 50, 74.

At the examination held at Iowa City, June 5-7, the total number of candidates examined was 54, of whom 53 passed and one failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent
University of Iowa, (1907) the grade of 75 was reached by two, 76 by one, 77 by two, 78 by five, 79 by two, 80 by three, 81 by five, 82 by four, 83 by six, 84 by two, 85 by five, 86 by seven, 87 by one, 88 by four, and 89 by one.		
University of Iowa, Homeo. Dept.	(1907)	80, 82, 83.

FAILED.

University of Iowa	(1907)	74.

At the examination held at Des Moines June 11-12, the total number of candidates examined was 55, of whom 41 passed and 14 failed. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
College of P. and S., Chicago	(1907)	78, 81, 86, 86, 89.
Northwestern University	(1907)	76, 78, 87.
Bennett Coll. of Ecl. Med. and Surg.	(1907)	85, 89.
Chicago Coll. of Med. and Surg.	(1907)	75, 77.
Drake University, (1907) 75, 75, 75, 76, 78, 80, 82, 85, 86, 87, 87, 89, 89, 90.		
Sioux City Coll. of Med.	(1907)	75, 78, 83.
Ensworth Central Med. Coll.	(1907)	76.
Creighton Med. Coll.	(1907)	76, 77, 78, 79, 81, 83.
New York Homeo. Med. Coll.	(1907)	78.
Eclectic Med. Institute, Cincinnati	(1907)	85.
Hahnemann Med. Coll., Philadelphia	(1907)	76.
Jefferson Med. College	(1907)	85.
Queen's University, Kingston, Ontario	(1904)	86.

FAILED.

Northwestern University	(1907)	68, 71.
Drake University	(1907)	65.
Sioux City Coll. of Medicine	(1907)	71, 73.
St. Louis Coll. of P. and S.	(1907)	72.
Ensworth Central Med. Coll.	(1907)	71.
University Med. Coll., Kansas City	(1902)	71.
Creighton Med. Coll.	(1906) 63; (1907)	58, 65, 71, 70, 74.

Wisconsin April Reciprocity Report.—Dr. J. V. Stevens secretary of the Wisconsin Board of Medical Examiners, sends us a report of those licensed through reciprocity at the meeting held April 9, 1907. Five candidates were registered under the exemption clause at this meeting. The following colleges were represented:

LICENSED THROUGH RECIPROCITY.

College.	Year Grad.	Reciprocity with.
Hahnemann Med. Coll., Chicago	(1900) Iowa; (1904)	Illinois
Rush Med. Coll.	(1896), (1902), (1904)	Illinois
Northwestern University	(3, 1906)	Illinois
Medical College of Indiana	(1904)	Indiana
Kentucky School of Medicine	(1898)	Illinois
Detroit College of Medicine	(1906)	Michigan
University of Minnesota	(1904)	Minnesota
Medical College of Ohio	(1905)	Ohio
Jefferson Medical College	(1881)	Michigan

REGISTERED UNDER EXEMPTION CLAUSE.

Rush Medical College	(1896)
Northwestern University	(1888)
Minneapolis College of P. and S.	(1890)
University of Toronto, Ontario	(1892)
Royal University of Christiania, Norway	(1892)

Wisconsin June Report.—Dr. J. V. Stevens, secretary of the Wisconsin Board of Medical Examiners, reports the written examination held at Milwaukee, June 18-20, 1907. The number of subjects examined in was 21; total number of questions asked, 100; percentage required to pass, 75 The total number of candidates examined for license to practice medicine was 60, of whom 51 passed, 4 failed and 5 were conditioned. Fifteen reciprocal licenses were granted and 4 candidates were registered under the exemption clause. The following colleges were represented:

PASSED.

College.	Year Grad.	Total Num. Ex.
Denver and Gross Coll. of Med.	(1907)	1
College of P. and S., Chicago	(1, 1906), (4, 1907)	5
Rush Medical College	(1, 1883), (1, 1887)	2
Illinois Medical College	(1907)	1
Hahnemann Medical College	(1907)	1
Tufts College Med. School	(1907)	1
College of P. and S., New York	(1903)	1
Milwaukee Medical College	(1907)	21
Wisconsin Coll. of P. and S.	(1, 1906), (17, 1907)	18

FAILED.

Barnes Medical College	(1905)	1
Milwaukee Medical College	(1907)	1
Wisconsin College of P. and S.	(1907)	2

CONDITIONED.

Rush Medical College	(1907)	1*
Illinois Medical College	(1906)	1†
Marion-Sims-Beaumont Medical College	(1894)	1†
Wisconsin College of P. and S.	(1907)	1†
Milwaukee Medical College	(1907)	1†

*Conditioned in practice. †Conditioned in pathology.

LICENSED THROUGH RECIPROCITY.

Co'lege.	Year Grad.	Reciprocity with.
Northwestern University	(1898), (1906)	Illinois
Coll. of P. and S., Chicago	(1905) Illinois; (1906)	Minnesota
Rush Medical College	(1900); (2, 1906)	Illinois
Hahnemann Med. Coll., Chicago	(2, 1906)	Illinois
American Med. Miss. College	(1906)	Illinois
American Coll. of Med. and Surg., Chicago	(1904)	Illinois
Illinois Medical College	(1906)	Illinois
Keokuk Medical College	(1901)	Iowa
University of Michigan	(1906)	Michigan
Trinity Medical College, Ontario	(1895)	Michigan

REGISTERED UNDER EXEMPTION CLAUSE.

Hahnemann Med. Coll., Chicago	(1887)
Rush Medical College	(1886)
College of P. and S., Milwaukee	(1907)
University of Freiburg, Austria	(1889)

Rhode Island July Report.—Dr. Gardner T. Swarts, secretary of the Rhode Island State Board of Health, reports the written examination held at Providence, July 2-3, 1907. The number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 29, of whom 16 passed and 13 failed, including 3 non-graduates. The following colleges were represented:

PASSED.

College.	Year Grad.	Per Cent.
Baltimore Med. Coll.	(1907)	75, 75.3
College of P. and S., Boston	(1907)	75
Tufts Coll. Med. School	(1907)	75, 86.7
Harvard Med. School	(1906) 80.6; (1907)	76.1
Cornell University	(1907)	82.2
College of P. and S., New York	(1907)	90.6
New York Homeo. Med. Coll.	(1905)	77.9
University of Pennsylvania	(1902) 77.3; (1907)	78.3, 88.9
Jefferson Med. Coll.	(1907)	88.8
Med. Coll. of South Carolina	(1905)	78.4
McGill University, Quebec	(1902)	82.2

FAILED.

Baltimore Med. Coll.	(1907)	50.8, 60.9, 66
Baltimore University	(1904) 52.8; (1907)	62.8
College of P. and S., Baltimore	(1907)	70.7
Maryland Med. Coll.	(1907)	64.8
Laval Univ., Quebec	(1895) 61.4; (1904) 65; (1905)	51

Medicolegal

Points from Résumé and Construction of New York Legislation Relative to Privileged Communications—Taking of Deposition as Waiver of Privilege.

The Court of Appeals of New York says, in the personal injury case of Clifford vs. Denver & Rio Grande Railroad Company, that the Revised Statutes of that state formerly provided, and the Code of Civil Procedure (section 834) now provides, that a physician "shall not be allowed to disclose any information which he acquired in attending a patient, in a professional capacity, and which was necessary to enable him to act in that capacity." The Revised Statutes, however, did not provide whether or when or how the patient could waive his right to object to the disclosure. The first provision found relating to that subject appeared in the Code of Civil Procedure, as first enacted, which provided that the prohibition should "apply to every examination of a person as a witness, unless" it was "expressly waived" by the patient. And the court goes on to show the way that legislation, starting with no regulation on the subject of waiver, in 1877 allowed an express waiver, in 1891 an express waiver "on the trial or examination," and since 1899 an express waiver "on the trial or examination" when made in open court, with no right to waive, by a paper executed prior to the trial, except by the stipulation of the attorneys for the respective parties. The prohibition applies "to any examination of a person as a witness," unless it is waived as thus provided.

Clearly the legislature did not mean that the patient could not waive the statute by calling the physician and examining him at the trial, or by not objecting if the other party called him. The court thinks it was not intended, in the absence of any specification to that effect, to prevent other acts from constituting a waiver when the necessary result thereof would take the case out of the spirit of the statute. The object of

section 834 was to prevent the disclosure of delicate and confidential matters, which might humiliate the patient in his lifetime and disgrace his memory when dead, so as to enable him to consult a physician in safety, knowing that his lips would be sealed by the law, until he himself removed the seal. When, however, the patient forces the physician to tell all he knows on the subject, and thus publishes to the world all that he might have kept secret, he no longer needs the protection of the statute, and withdraws himself from the spirit of the prohibition. That is the logical and necessary effect of such an act, and, if the legislature had intended to prevent that result, the court thinks it would have said so in specific terms.

The special question in this case was whether the plaintiff's causing the deposition of a physician to be taken constituted a waiver under the statute as to the testimony so taken. The court holds that it did. The language of the section limiting waivers to such as are made in open court on the trial of an action or by the stipulation of the attorneys for the respective parties should be construed as to promote, not to defeat, the purpose of the statute. While there is no doubt that the examination of a witness under a commission can not be regarded for all purposes as part of the trial, still the taking of testimony to be used as evidence by either party may well be regarded as a part thereof so far as it affects the question here before the court. The application for a commission is made in open court to take evidence to prove or disprove the issue. It is a proceeding authorized by law to compel a witness to give evidence to be used in deciding the case. Although preliminary to the formal trial in point of time, in substance it may be held so much a part of the trial as to comply with the amendment of 1899, passed for the purpose, already pointed out, of preventing waivers by contract made long before the commencement of the action.

Moreover, when the plaintiff in this case moved for a commission to examine a physician, her attorneys either signed a notice of motion or a stipulation for that purpose. Interrogatories were prepared and signed by her attorneys, calling on the witness to disclose, in full, information which he had acquired while attending her in a professional capacity. Cross-interrogatories were prepared by the other party at some expense and annexed to the commission. The court thinks that the attorneys for the respective parties thus stipulated a waiver of section 834 as permitted by section 836, for they signed papers, in a legal proceeding taken in this action, which could have no practical effect unless they operated as a waiver. Neither the form nor the contents of the stipulation is prescribed, and hence whatever shows a clear intention to surrender the protection of the statute is sufficient.

Interrogatories asking the physician to tell what his examination of the plaintiff disclosed, to describe her injuries and the like, showed an unmistakable intention to make public all the information that he had acquired in attending her. A voluntary disclosure of the privileged testimony is conclusive evidence of an intention to waive the privilege. The questions could not be answered without making a full disclosure, and hence they necessarily showed that to have been the intention, which is the essence of a waiver.

If the plaintiff could thus, through what may fairly be held to be the stipulation of her attorneys, force the physician to give evidence and could then object to such evidence being used in the only way authorized by law, she could mock the court and bring ridicule on its process with impunity. The courts should not permit their remedies to be trifled with, nor at the election of one party, and to the injury of the other, turned into a vain and empty ceremony. The necessary effect of signing the various papers for the commission, including the direct and cross-interrogatories calling specifically for the precise information which the statute keeps secret unless waived, as the court thinks, constitutes a waiver of the prohibition by the stipulation of the attorneys for the respective parties.

Sufficiency of Mental Capacity for Making Wills.

The Supreme Court of Georgia says, in the case of Slaughter vs. Heath, that various attempts have been made to establish some arbitrary test of testamentary capacity, but they have each had to be abandoned or modified as new combinations of facts arose in later cases. At an early date the English courts entertained the view that it was not required that one should be mentally perfectly sound in order to make a will, and that a delusion not of a kind to affect the will would not render it invalid. Then they seemed to incline to a narrower view. Then they returned to their original position that testamentary capacity was not the same thing as perfect sanity.

The American courts have generally held that perfect mental soundness did not furnish the test, but that there may be partial insanity, disconnected from and not affecting the making of the will, which would not render it invalid.

What is needed is a sensible, practical test, intelligible to a jury. Rejecting any arbitrary tests, and looking at the mental capacity necessary in the light of the thing to be done, viz., the making of a will, the courts now have generally reached a fairly uniform definition of testamentary capacity, in the absence of special statutes. It is thus stated in "Gardner on Wills," page 100, section 31: "A testator has a sound mind, for testamentary purposes, only when he can understand and carry in mind, in a general way, the nature and situation of his property, and his relations to the persons around him, to those who naturally have some claim to his remembrance, and to those in whom and the things in which he has been chiefly interested. He must understand the act which he is doing, and the relation in which he stands to the objects of his bounty and to those who ought to be in his mind on the occasion of making his will."

This court holds that a person has testamentary capacity who understands the nature of a testament or will, viz., that it is a disposition of property to take effect after death, and who is capable of remembering generally the property subject to disposition and the persons related to him by the ties of blood and of affection, and also of conceiving and expressing by words, written or spoken, or by signs, or by both, any intelligible scheme of disposition. If the testator has sufficient intellect to enable him to have a decided and rational desire as to the disposition of his property, this will suffice.

An inquisition of lunacy and a return that the person sought to be declared insane or an imbecile was not so, with an entry of the ordinary confirming such return, is not conclusive evidence against third persons, who were not parties to the proceeding, although notified thereof as next of kin.

Unnecessary Information Not Privileged.

The Supreme Court of New York, Appellate Division, Second Department, holds that in the personal injury case of Travis vs. Haan the exclusion of the testimony of a physician of what the plaintiff told him of how the accident happened was reversible error. That he was treating her professionally did not make the evidence inadmissible under section 834 of the New York Code of Civil Procedure on her objection. The prohibition of that section only applies to information to physician "which was necessary to enable him to act in that capacity." She did not need to tell him that she carelessly got her hand into the machine to enable him to treat the injuries to it.

Drainage from Typhoid Fever Place.

The Supreme Court of Errors of Connecticut holds, in the case of Gorham vs. City of New Haven, brought to recover damages for the pollution of a stream running across the plaintiff's dairy farm, that evidence that there were numerous cases of typhoid fever in a building, the drainage from which was conducted by the defendant to the beds for filtering the sewage that ran into the plaintiff's stream, was admissible in connection with evidence that the plaintiff's stream continued to be contaminated by the drainage after the use of the filter beds, as tending to prove both a diminished value of such use, even without further proof that the germs of such disease actually reached the plaintiff's stream, and although it appeared that the water of the plaintiff's stream was not then used for drinking purposes. Under such circumstances the plaintiff could neither be expected to use such a stream for drinking purposes for his own cattle nor to be able to procure others to so use it.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

July 27.

1 *Inoperable Sarcoma. W. B. Coley, New York.
2 Through Physiology to Pathology in Complications of Gall-bladder Disease. G. K. Dickinson, Jersey City.
3 *Reinfection with Syphilis. J. Brew, Nashville, Tenn.
4 *The Long-Waisted Woman and Her Movable Kidney. A. E. Gallant, New York.
5 *Apomorphin in Acute Alcoholism. C. A. Rosenwasser, Newark, N. J.

1. Inoperable Sarcoma Treated with Mixed Toxins.—Coley reports 42 cases of inoperable sarcoma, treated by himself, with the mixed toxins of erysipelas and *Bacillus prodigiosus*, with 26 patients remaining well after a lapse of from 3 to 14 years since the treatment. Of these cases, 17 were round-celled sarcomas, 17 spindle-celled sarcomas, 2 mixed-celled sarcomas, one chondro-sarcoma and one epithelioma. In 4 cases no microscopic examination was made; yet the clinical features of the cases left hardly any doubt as to the diagnosis. The late results are as follows: Twenty-one patients well from 5 to 14 years; 26 well from 3 to 14 years, and 10 well from 10 to 14 years. Up to the present time Coley has been able to collect 12 cases of sarcoma of the long bones in which the use of the toxins has rendered amputation unnecessary. In 8 of these cases the sarcoma was of the round-celled variety, in 2 spindle celled, and in the remaining 2 no microscopic examination was made, but amputation had seemed the only means of saving the patient's life. Eight of these patients remained alive and well and free from recurrence from 3 to 8 years; one for 2 years; one for one year; 2 patients for less than six months. Coley believes that there is a new field for the use of toxins, and that is their employment after all primary operations for sarcoma, and possibly carcinoma, as a prophylactic against recurrence. In about 25 cases in which he has carried out such prophylactic treatment the number of recurrences has been extremely small. His plan has been to give two or three periods of treatment of from four to six weeks' duration.

3. Reinfection with Syphilis.—Brew describes a case seen by himself and treated at various times by two reputable physicians, in which there was every reason to believe that syphilis had existed and had been cured and that a reinfection had occurred. The patient was treated carefully for an undoubted attack of syphilis, from which he recovered and remained without any syphilitic manifestations for fifteen years. He was then treated for a hard chancre followed by a macular eruption and sore throat. Marrying then, a syphilitic child was born to the couple, although the mother showed no evidence of ever having had the disease. The manifestations of the second attack could not have been tertiary in their nature.

4. The Long-Waisted Woman and Her Movable Kidney.—Gallant believes that weight of clothing and compression at the waist line, at and after puberty, have an important effect on girls in producing movable kidneys. He reviews 50 cases in which careful measurements were made.

5. Apomorphin in Acute Alcoholism.—Rosenwasser speaks highly of the value of apomorphin in doses of from 1/30 to 1/10 grain as a sedative and hypnotic in cases of acute alcoholism. A very few minutes after administering an emetic dose by hypodermic injection vomiting occurs, due to the action of the drug on the vomiting center of the medulla. Just before vomiting the pulse is weakened and increased in frequency, and after vomiting ceases it becomes slower and stronger, often stronger and slower than it was before the injection was given. Vomiting is preceded by salivation and slight nausea. It may occur only once or be repeated several times. Very soon after the vomiting subsides, a matter of a few minutes in most cases, the patient falls into an apparently natural sleep and may sleep from two to eight hours, awakening refreshed, sober, and rational in most cases. It is not necessary, however, to give the emetic dose in order to obtain the hypnotic effect, and in many cases 1/30 grain will induce sleep.

New York Medical Journal.

July 27.

6 *Transfusion in Dogs on which Bilateral Nephrectomy has been Performed. G. W. Crile and H. P. Cole, Cleveland.
7 *Operations for Cleft Palate and Their Result. G. Hudson Makuen, Philadelphia.
8 Ear, Nose and Throat Conditions in Children. C. Graef, New York.
9 *New Operation for Extirpation of Varicose Veins of Leg. W. W. Babcock, Philadelphia.
10 Relation Between the Physiologic Action of Ions and their Physico-chemical Properties. (Concluded.) W. N. Berg, New York.
11 *Phagocytosis, etc., in Sputum as a Measure of Resistance in Tuberculosis. A. H. Allen, Trudeau, N. Y.
12 *Consanguinity: A Factor in Immunity to Scarlet Fever. J. W. Brandeis, New York.
13 Treatment of Gonorrheal Epididymitis. J. J. Valentine, New York.

6. Transfusion in Dogs After Bilateral Nephrectomy.—The experiments reported by Crile and Cole were undertaken to ascertain whether the life of a dog could be prolonged beyond its normal time, after bilateral nephrectomy. In the five dogs in which no transfusion was performed the longest duration of life was 72 hours, the shortest 44. In the dogs that were transfused at the forty-eighth hour, one died 44 hours after transfusion, two dogs lived 18 hours, and another 42 hours. The dog that was transfused at the seventy-second hour lived 40 hours after transfusion, or 112 hours after nephrectomy. The dogs transfused at the forty-eighth hour lived, one 92 hours after nephrectomy, two 66 hours, and one 90 hours. Comparing these survivals with those of other experimenters mentioned, it would seem that transfusion after this operation has no material effect on the length or duration of life.

7. Operations for Cleft Palate.—Makuen summarizes his paper as follows: 1. An operation for the closure of a cleft palate should be done only when there is a fair likelihood of success. 2. It should be done only by those having acquired special skill in nasopharyngeal and oral surgery. 3. When it is probable that several operations may be necessary the parents or patient should be so informed. 4. The operation should be done as early as possible. 5. In the difficult adolescent cases the operation after a preliminary tracheotomy, as described by Dr. McKernon, may be preferable. 6. There are two reasons for attempting to close a cleft palate, namely, to improve the general health of the patient and to increase the efficiency of the faculty of speech. 7. The general health of the patient is benefited in two ways, namely, by improving the hygiene of the nasopharynx and the oral cavity, and by improving the general morale of the patient. 8. The speech is improved by a course of psycho-physical training, in which the patient is taught first to recognize normal speech and then to make the best use of his still imperfect organs in its production.

9. Extirpation of Varicose Veins of Leg.—Babcock has devised a procedure by means of which almost the entire saphenous vein may be removed through two small incisions in from three to ten minutes, under spinal anesthesia. The veins are extirpated by means of a special extractor, resembling a very long double-ended *bougie à boule*. A line is taken from a point one-half inch internal to the center of Poupart's ligament running to the posterior margin of the inner condyle of the femur. Across this line, about 2½ inches below Poupart's ligament, a transverse incision, one inch in length, is made through the skin and subcutaneous fat down to the muscular sheath. The index finger is then inserted to the bottom of the wound, slid backward for a short distance close to the muscular sheath and then hooked inward and forward away from the muscle, when it at once catches the thick resistant cord of the saphenous vein, which is lifted into the wound and at once clamped above by a hemostat. This maneuver enables the vein to be exposed within a few seconds, even in an obese patient. The vein is then incised below the hemostat, and the hemorrhage at once controlled by entering the smaller bulb of the extractor into the lumen. The instrument is then carefully passed down the vein until it meets with an obstruction that can not be overcome. The size and shape of the acorn tip of the instrument enables the extractor to slip through valves which would catch a smaller instrument. At times the instrument readily passes to the ankle; again it is arrested in the middle or upper third of the leg. The upper end of the vein where it surrounds the

sheath of the extractor is now isolated for a short distance and tied firmly to the shaft of the instrument by a strong silk ligature. This controls all oozing from the open vein. The vein is then ligated above and divided below the hemostat, and the stump dropped. The lower end of the instrument is now located. A half-inch incision on the bulb exposes the vessel, the vein is separated from surrounding tissues for a short distance and clamped below; the bulbous expansion of the extractor is exposed, grasped and firm downward traction made on the instrument. This traction pulls the vein loose from its surroundings, tears off the venous branches an inch or more from the main trunk, and causes the wall of the vein to be massed or pleated in small compass just below the upper bulbous expansion of the instrument. The extractor is pulled from the lower incision with a fusiform mass of vein closely packed against the upper bulb of the instrument.

11. **Measuring Resistance in Tuberculosis.**—As the result of a very extensive study undertaken for the purpose of ascertaining whether or not the intracellular position of tubercle bacilli in the sputum, the presence of disintegrated forms, clumps of parallels or variations in acid resistance, gave any evidence of the resistance of the patient, Allen concludes that phagocytosis points but doubtfully to a good prognosis. Fifty-nine per cent. of the cases showed phagocytosis, when the phagocytic index was applied; 82 per cent. showed phagocytosis when all cases showing phagocytosis at any time were included.

12. **Consanguinity and Immunity in Scarlet Fever.**—Brandeis found that the percentage of contagiousness of scarlet fever among members of the same family, as derived from the original cases, reaches only the low figure of 10 per cent.

Boston Medical and Surgical Journal.

July 25.

14 Hydrophobia and Its Prevention. C. P. Sylvester, Boston.
15 Uterosacral Ligaments. D. H. Craig, Boston.
16 *Contamination of the Air of our Cities with Sulphur Dioxid, the Cause of Respiratory Disease. T. W. Schaefer, Kansas City, Mo.
17 *Case of Extensive Resection of the Stomach for Carcinoma. F. Cobb, Boston.
18 Department of School Hygiene. L. H. Gulick, New York.
19 *Acute Inflammation of Tendon Sheaths Following Acute Tonsillitis. E. A. Tracy, Boston.

16. **Contamination of Air with Sulphur Dioxid.**—Schaefer says that the weight of evidence concerning the relation of sulphur dioxid to public health indicates that its effects are really serious if not lasting on certain susceptible persons, and that its presence in atmospheric air is a positive menace to the hygienic welfare of beings.

17. **Resection of Stomach for Carcinoma.**—In the case reported by Cobb, about two-thirds of the stomach were resected, and seventeen months after the operation the patient is alive and in apparently perfect health, and engaged in hard manual labor. Cobb says that the case is primarily of interest because it presents a strong argument in favor of operation, in all cases of gastric cancer, even those which are apparently hopeless. The patient, male, 52 years old, had been ill for seven months prior to the operation. He presented all the typical symptoms of cancer of the stomach. The tumor was situated on the anterior wall of the stomach, extending from the middle line toward the pylorus. The diseased area was exsected and the cut ends were united by end-to-end suture. The patient now eats anything without distress; he does not vomit, and has no symptoms of indigestion. There is no evidence of a recurrence of the disease. The case is interesting also from a pathologic and etiologic point of view, inasmuch as it furnishes a striking illustration of the ingrafting of carcinoma on a previous gastric ulcer.

19. **Acute Tenosynovitis Following Tonsillitis.**—Tracy reports two cases of acute inflammation of the perineal tendon sheaths following an attack of acute tonsillitis.

Lancet-Clinic, Cincinnati.

July 27.

20 Diagnosis and Treatment of Brain Traumatism. J. N. Sluss, Indianapolis.
21 *Head Injuries. W. B. Burns, Memphis, Tenn.

21.—See abstract in THE JOURNAL, Dec. 8, 1906, page 1945.

American Journal of Obstetrics, New York.

July.

22 *Appreciation of the Work of Dr. Henry J. Garrigues in Introducing Asepsis into Obstetric Practice. B. H. Wells, New York.
23 *Ectopic Gestation and Treatment of Tubal Rupture. H. Robb, Cleveland.
24 *Dystocia Following Ventrofixation of the Uterus. E. Hurdon, Baltimore.
25 *Abdominal Signs of Pulmonary Disease in Children. J. D. Thomas, Washington, D. C.
26 *Surgical Conditions of the Kidneys. C. H. Chetwood, New York City.
27 *Traumatic Displacement of the Nongravid Uterus. C. Chase, New York.
28 *Volvulus of the Intestine. G. T. Vaughan, Washington, D. C.

22.—See abstract in THE JOURNAL, June 1, 1907, page 1895.

23.—See abstract in THE JOURNAL, June 1, 1907, page 1894.

24. **Dystocia Following Ventrofixation.**—Hurdon favors ventrofixation for the treatment of retrodeviations and prolapsus of the uterus, because the operation restores the woman to perfect health, and if any dystocia is caused thereby the adhesions may be released through a very small abdominal incision, and thus permit the undisturbed progress of the labor. Hurdon says that the earlier the operation is performed the better, but the seventh month is not too late. If, however, the complication is not discovered until the last month of pregnancy, it is advisable to wait until term, since, if Cesarean section should be found necessary, it could then be performed immediately.

25. **Abdominal Signs of Pulmonary Disease in Children.**—Thomas discusses the abdominal pains occurring during pneumonia and pleurisy, and reports a number of cases.

26.—See abstract in THE JOURNAL, June 1, 1907, page 1895.

27. **Traumatic Displacements of Nongravid Uterus.**—Two cases are reported by Chase. One of the patients, a young woman, 17 years of age, was thrown violently from a bicycle, striking the pavement on her buttocks. A rectal examination disclosed the uterus firmly wedged down into the hollow of the sacrum. On sufficient pressure from below it was released and sprang back into normal position. Relief from pain and nausea was almost instant, and the patient recovered completely in a few days. The second case was unique. The patient was under medical care, and had been examined the day before the accident. The accident consisted of falling backward from the fourth or fifth step of a stepladder, the woman striking on her buttocks and back. Vaginal examination showed a retroverted prolapsed and incarcerated uterus, which was restored to its normal position only after the use of a considerable amount of pressure applied in Douglas' cul-de-sac. The woman made a perfect recovery.

28. **Volvulus of Intestine.**—Six cases are reported by Vaughan; four of the patients were operated on and three recovered.

Annals of Surgery, Philadelphia.

July.

29 *Results of Radical Operation for Cure of Carcinoma of the Breast. W. S. Halsted, Baltimore.
30 *End Results of 376 Primary Operations for Carcinoma of the Breast. R. B. Greenough, C. C. Simmons and J. D. Barney, Boston, Mass.
31 *Final Results in 164 Cases of Carcinoma of the Breast. A. J. Ochsner, Chicago.
32 *End Results Following Operations for Carcinoma of the Breast. N. Jacobson, Syracuse, N. Y.
33 *End Results Following Operations for Carcinoma of the Breast. J. C. Oliver, Cincinnati, O.
34 *Carcinoma of the Breast. A. T. Cabot, Boston.
35 *End Results Following Operations for Carcinoma of the Breast. L. S. Pilcher, Brooklyn, N. Y.
36 *Late Recurrences After Operations for Carcinoma of the Breast. J. Ransohoff, Cincinnati, O.
37 *Carcinoma of the Bones Following Carcinoma of the Breast. H. R. Wharton, Philadelphia.
38 *Thymus Gland Treatment of Cancer. F. Gwyer, New York.
39 *Peritoneal Tuberculosis. P. Syms, New York.
40 *Acute Diffuse Gonorrheal Peritonitis. C. Goodman, New York.
41 *Treatment of Appendicitis. L. A. Stimson, New York.
42 *Motor-boat Fractures. H. P. De Forest, New York.

29. **Carcinoma of Breast.**—Halsted makes a very exhaustive and detailed report on 210 traced cases of carcinoma of the breast. Of this number, 35 patients were reported living in 1906-07; 20 in 1905. Sixteen patients are known to have died of causes other than carcinoma of the breast three or more years after operation, and four patients died of other disease less than three years after operation, in which the cure was demonstrated by autopsy. Thus, 75 cases may be regarded as

cures, 53.6 per cent. of the 210 traced cases. In 14 cases metastases appeared after three years, in one instance manifesting itself as late as eight years, and in two instances more than six years after the operation. Four of the 232 patients operated on died in the hospital. Halsted says that the neck operations were responsible for the greatest mortality.

30.—This article also appeared in the *Boston Medical and Surgical Journal*, June 20, 1907.

31, 32.—See abstracts in THE JOURNAL, June 22, 1907, page 2150.

33. **Carcinoma of Breast.**—Oliver gives complete histories of 35 cases. Twenty-two of the patients are dead; 12 are alive and well from three to ten and one-half years after operation. One patient is alive more than three years after operation, but has an inoperable recurrence. The radical operation, without removal of the supraclavicular glands was performed 30 times. The breast was removed and the axilla cleared out seven times. The percentage of recovery after radical operations was 33.3; after the simpler operations it was 57.15. The mortality was least in those cases in which the tumor was located in the central area of the breast and in the lower third. Oliver concludes that the most potent factor in prognosis is the histologic character of the neoplasm. The prognosis becomes better when dealing with the hard, fibrous, slow-growing varieties.

34. **Id.**—Cabot reports 42 cases. All the patients recovered from the operation and 9 are entirely free from recurrence after from four to nineteen years. Five patients are still living, though they have had a recurrence. One of these was operated on three years ago, 3 were operated on four years ago, and one five years ago. The remaining 28 patients died of the disease, 17 in one year, 2 in two years; one patient lived three years, 2 others lived four years, and 6 lived five years. Of the 9 patients who are well without recurrence the pectoral muscles were removed in 2. In the remaining 7 the breast and axillary contents were removed without removal of the muscles. In the 5 patients still living with recurrence, the muscles were removed, with the breast and axillary contents. Of the 28 patients who died, the muscles, breast and axillary contents were removed in 12. In the remaining 16 cases the breast and axillary contents alone were removed.

35.—See abstract in THE JOURNAL, June 22, 1907, page 2149.

36.—See abstract in THE JOURNAL, June 22, 1907, page 2150.

37. **Secondary Carcinoma of Bones.**—Wharton reports 5 cases of carcinoma of bones, following carcinoma of the breast, for which an operation had been done. The bones involved in these cases were respectively the lumbar vertebræ, left clavicle, both femurs, right femur, left femur. One of the patients had not had the breast tumor removed. In the remaining four the symptoms of bone involvement appeared six, five, six and eight months respectively, after removal of the breast tumor.

38. **Thymus Gland Treatment of Cancer.**—Gwyer makes a preliminary report on the treatment of cancer with thymus gland, and reports a case of inoperable cancer of the breast in which this treatment gave the patient great relief from symptoms. The gland is given either dried, and ground to powder, or as a watery extract of nucleo-proteids and other elements. The dose of the powder varies from 1 to 4 drams, three or four times a day. Sodium phosphate, half an ounce, is given once a day to produce elimination. Gwyer also refers to a number of other cases in which marked benefit resulted from this treatment. It diminishes or eliminates pain and lessens the size of the growth. Every patient so far treated has been considered beyond operation, and beyond hope of cure.

39. **Peritoneal Tuberculosis.**—Syms reviews the literature with reference to the treatment of certain forms of peritoneal tuberculosis by laparotomy.

40. **Acute Diffuse Gonorrheal Peritonitis.**—Goodman reports one case to show that the gonococcus is capable of producing a local or a diffuse peritonitis, without the presence of other biogenic bacteria.

41. **Treatment of Appendicitis.**—Stimson reviews his hospital experiences during the past four years, in the operative treatment of appendicitis. During this time he has done 98 operations, with only one fatality. He employs the curved transverse incision, with longitudinal separation of the recti muscles, and the McBurney gridiron incision. The stump was invaginated with a purse-string suture in 37 cases, and in 49 it was simply tied. Stimson believes in drainage, claiming that it gives him a feeling of security. The one death occurred in a series of 13 cases of general extensive peritonitis.

42. **Motor Boat Fractures.**—De Forest reports 9 cases of fracture of the carpal and metacarpal bones, and the bones of the wrist joint, caused by accidents incident to the running of motor boats.

Journal of Experimental Diseases, New York.

July 17.

43 *Histologic Comparison of Six Cases of Multiple Myeloma. H. A. Christian, Boston.
44 Histologic Lesions of Experimental Glanders. C. W. Duval and P. G. White, Montreal.
45 Method of Differentiating in Sections of Tissue Bacteria decolorized by Gram's stain. C. W. Duval, Montreal.
46 *Study of the Effect of Intravenous Injections of Solutions of Pancreatic Tissue. A. Egdahl, Iowa City, Ia.
47 Experimental Pleurisy. E. L. Opie, New York.
48 Transformation of Serofibrinous into Purulent Pleurisy. E. L. Opie.
49 *Differentiation of Streptococci by Means of Fermentative Tests. L. Buerger, New York.
50 Extracellular and Intracellular Venom Activators of the Blood. H. Noguchi, New York.
51 *Influence of Reaction and of Desiccation on Opsonins. H. Noguchi.
52 Spirochæta (Treponema) pallida and Syphilis. S. Flexner, New York.

43. **Multiple Myeloma.**—Christian has made a comparative anatomic study of 6 cases of myeloma. His results show a striking similarity of structure in all the cases, the differences being only minor ones. The cells have a finely granular, slightly basophilic cytoplasm, an eccentric nucleus with nucleolus and nuclei membrane, and show a tendency of the chromatin to mural arrangement. The tumor cells consequently resemble bone marrow plasm cells rather than myelocytes. As most of the cases reported by others show cells with these characteristics, the conclusion is warranted that these tumors form a group within which no greater variation in cellular structure occurs than in other tumor groups.

46. **Effect of Injections of Pancreatic Tissue.**—Egdahl, from experimental injections of solutions of pancreatic tissue, obtains results indicating that the sudden collapse of acute pancreatitis is due to toxic substances derived from disintegrating pancreatic tissue. It is probable that this toxic substance or substances are of the nature of aromatic and amino compounds.

49. **Differentiation of Streptococci.**—Buerger finds that streptococci from various sources vary greatly in their ability to produce acid fermentation of various carbohydrates. In order that conclusions drawn from tests of this nature may have value, they must be made only after growth in the media which are most favorable for the cocci. His results give six groups of streptococci when tested with dextrose, levulose, galactose, maltose, saccharose, lactose, inulin, dextrin and mannite, namely, those fermenting all; all but mannite; all but inulin; all but inulin and mannite; all but inulin and lactose, and all but inulin, mannite and saccharose. Inasmuch as a comparatively small number of strains has been tested in this way, definite classification is not warranted, but large series of tests should be carried out in order to determine whether streptococci are classifiable by fixed fermentative properties.

51. **Opsonins.**—Noguchi shows that opsonins act best in neutral medium. No opsonification occurs in a serum the alkalinity of which corresponds to more than 1.6 c.c. of 1/20 N solution or acid more than 5 c.c. of this concentration per 1 c.c. serum. The opsonic index obtained with a native serum can not be regarded as the expression of the action of all the opsonin, but only of so much as the degree of optimum of reaction permits to act; hence estimation of opsonic power in order to indicate as accurately as possible the exact amount of opsonin present should be made in neutral medium and with diluted serum. All serum increases in opsonic power on diminution of original alkalinity. Opsonins whose action is suspended by unsuitable reaction become active again if the reaction is brought to neutral unless the acid or alkali used approaches the strength of 1 N, when the alteration in the opsonin becomes permanent. Alcohol or dehydration robs serum of its opsonin. Serum remains practically unaltered in opsonic

power on desiccation at 23 C., and in a dry state opsonins are preserved for at least two years. In this state they resist temperature up to 150 C., regaining their original thermolability when dissolved in the proper amount of water. These characteristics of opsonins correspond to properties peculiar to ferments.

Illinois Medical Journal, Springfield.

July.

53 Rôle of Gross Parasites in Diffusion of Infectious Diseases. R. B. Preble, Chicago.
54 *Achylia Gastrica and Its Relation to Diarrhea. F. Billings, Chicago.
55 *Ulcerative Endocarditis. J. B. Herrick, Chicago.
56 Interstate Medical Reciprocity and Our Degraded Certificate. C. T. Robinson, Edwardsville, Ill.
57 Case of Hydatid Disease. L. B. Ashton, Quincy, Ill.
58 Opsonic Therapy in Skin Disease. R. W. McClintock, Chicago.
59 *Opsonins—Opsonic Index and Vaccine Therapy. J. C. Hollister, Chicago.
60 *Report of Two Unusual Cases. G. D. Lockie, Pontiac.

54.—This article also appeared in the *Virginia Medical Semi-Monthly*, June 21, 1902; see abstract No. 78.

55.—See abstract in THE JOURNAL, June 8, 1907, page 1981.

59.—See abstract in THE JOURNAL, June 29, 1907, page 2204.

60. **Unusual Cases.**—The first case reported by Lockie apparently was one of septicemia following confinement, but no evidence of infection was obtainable. The patient suffered severely for four or five weeks, and then recovered without any treatment. This occurred following two confinements. The second time Lockie injected about 30 minims of the patient's milk into each arm, repeating the injection on the second day, and recovery was immediate. The second patient was an epileptic. The seizures were severe and frequent. Lockie secured some of the child's saliva, and injected about 10 minims into the buttock. The child had no epileptic attacks for three days. Lockie gave three injections, with the same results each time. The child left the city, but it is said that the attacks had lessened in frequency.

Dominion Medical Monthly, Toronto.

July.

61 Relation of the Medical Profession to the Public. J. W. S. McCullough, Alliston, Ont.
62 *Case of Congenital Umbilical Hernia. A. E. McColl, Belleville, Ont.

62. **Congenital Umbilical Hernia.**—McCall reports a case of large umbilical hernia, the ring measuring 3½ inches in diameter. The sac protruded over four inches above the abdominal wall, and it was slightly transparent. About one-third of the intestines was in the hernia. The baby was operated on nine hours afterward, under general anesthesia. The hernial ring was removed completely and the edges of the wound were then brought together by means of sutures and supported by wide adhesive straps. The opening closed in about ten days. The child recovered completely, and is now 2½ years old, well and strong.

Medical Library and Historical Journal, Brooklyn.

March.

63 Charles White: Surgeon and Obstetrician. J. G. Adami, Montreal.
64 Ælius Aristides, a Hypochondriac in the Time of the Antonines. W. A. Holden, New York.
65 Biography of François Magendi. (Concluded.) P. M. Dawson, Baltimore.
66 Should the Size or Growth of a Medical Library be Restricted? C. P. Fisher, Philadelphia.

The Laryngoscope, St. Louis.

May.

67 Cauterization of Four Susceptible Areas of Nasal Mucosa. G. Killian, Freiburg, Germany.
68 Chronic Suppuration of Frontal Sinus. H. P. Mosher, Boston.
69 Rapid Entrance of Maxillary Antrum Through Inferior Meatus Without General Anesthesia. H. H. Curtis, New York.
70 Treatment of Chronic Empyema of Antrum of Highmore. J. H. Abraham, New York.
71 Resection of Cartilaginous Septum. D. B. Kyle, Philadelphia.
72 Excision of Intrinsic Malignant Growths of Larynx. J. Solis-Cohen, Philadelphia.
73 Non-Recurrent Carcinoma of Larynx Removed from Natural Passages. E. F. Ingals, Chicago.
74 *Trypsin in Laryngeal Epithelioma. H. Dupuy, New Orleans.
75 Frontal Sinus Operation. M. Halle, Berlin.
76 Blunt and Cutting Laryngeal Dilator and Self-Acting Epiglottis Lifter. J. W. Gleitsmann, New York.
77 New Antral Chisels and Technic in Opening Maxillary Sinus. A. M. Corwin, Chicago.

74.—See abstract in THE JOURNAL, July 13, 1907, page 189.

Virginia Medical Semi-Monthly, Richmond.

June 21.

78 *Achylia Gastrica and Its Relations to Diarrhea. F. Billings, Chicago.
79 Is Gaseous Disinfection Reliable? J. F. Armentrout, Staunton, Va.
80 Alkaloidal Therapeutics. J. Burke, Manitowoc, Wis.
81 Prophylactic Pediatrics. C. C. Wallin, White Sulphur Springs, Mont.
82 Principles of Surgery. (Continued.) S. McGuire, Richmond.

78. **Achylia Gastrica and Diarrhea.**—Billings reports 4 cases, which he believes afford sufficient evidence to show that achylia gastrica exists in individuals who apparently suffer from no organic disease of the stomach, and no constitutional dyscrasia, or malnutrition of sufficient degree to cause it, and that it may therefore be caused by a general neurotic condition. The treatment consists in an attempt to improve the general nervous tone of the individual, and in increasing the general nutrition by frequent small feedings of food of such a character that the unavoidably undigested remnants, which remain in the intestine, will cause as little disturbance as possible. Thorough division of food by mastication is essential. The retention of undigested particles in the colon may be overcome by a colonic flushing. Moist hot applications will relieve colic.

Pennsylvania Medical Journal, Athens.

June.

83 Laryngectomy for Malignant Disease. Case of Laryngeal Epithelioma. C. Jackson, Pittsburg, Pa.
84 *Ocular Infections Due to Disease of the Conjunctiva and the Lachrymal Passages. E. A. Shumway, Philadelphia.
85 Postoperative Infection in Eye Surgery. G. E. Curry, Pittsburg.
86 *Treatment of Ulcer of the Cornea. E. Stieren, Pittsburg.
87 Affections of the Eye Arising from Autointoxication of Endogenous Origin. H. F. Hansell, Philadelphia.
88 Quarantine. A. B. Brumbaugh, Huntingdon, Pa.
89 Use and Abuse of Bromids in Epilepsy. M. Woods, Philadelphia.
90 Hematuria Due to Small Doses of Urotropin. J. G. Beardsley, Philadelphia.
91 Case of Abdominal Pregnancy with Postmortem Report. B. F. Myers, Chambersburg, Pa.

84.—See abstract in THE JOURNAL, Sept. 29, 1906, page 1049.

86.—See abstract in THE JOURNAL, Oct. 6, 1906, page 1130.

Wisconsin Medical Journal, Milwaukee.

June.

92 Significance of Traumatic Cranial Defects. A. P. Mueller, Milwaukee.
93 Early and Qualifying Diagnosis of Tumors of the Urinary Bladder. G. Kolischer, Chicago.
94 Plea for Early Radical Operation in Femoral Hernia. R. Elmergreen, Milwaukee.
95 Case of Transverse Rupture of the Membranous Urethra in the Male. K. W. Doege, Marshfield, Wis.

Western Medical Review, Omaha.

June.

96 President's Address of the Nebraska State Medical Association. F. A. Long, Madison, Neb.
97 Disease of the Right Superior Quadrant. C. C. Allison, Omaha.
98 Diagnosis and Treatment of Gastric Ulcer. J. M. Mayhew, Lincoln.

Journal of the South Carolina State Medical Association, Greenville.

June.

99 Arteriosclerosis of the Uterine and Pelvic Blood Vessels with Symptoms Resembling Cancer of the Uterus. C. M. Rees, Charleston.
100 Importance of Routine Examination of the Feces for Intestinal Parasites. J. C. Sosnowski, Charleston.
101 General Paralysis or Paresis. J. J. Watson, Columbia.
102 The Pharyngeal Lymphatic Ring. E. W. Carpenter, Greenville.

Texas State Journal of Medicine, Fort Worth.

June.

103 Unity and Harmony in the Medical Profession. G. B. Foscue, Waco, Tex.
104 Individualism in Medicine as Influenced by Medical Education. W. S. Carter, Galveston, Tex.

Fort Wayne Journal-Magazine.

June.

105 Surgical Corrections of Hook Nose. C. C. Miller, Chicago.
106 Quadruplets. S. V. Wilking, Roanoke, Ind.

Detroit Medical Journal.

June.

107 The Hospital Problem in Detroit. W. L. Babcock, Detroit, Mich.
108 Local Anesthesia in Operations for Hernia and Varicocele. A. McLean, Detroit.
109 Fallacies in Appendicitis. G. R. Cruickshank, Windsor, Ont.
110 Progress in Internal Medicine. F. Smithies, Ann Arbor.
111 Introduction to the Study of the Infant's Stool. (Continued.) P. Selter, Solingen, Germany.

Archives of Otology, New York.

June.

112 Origin of Cells Found in the Deeper Layer of the Stria Vascularis. G. E. Shambaugh, Chicago.
113 Value of v. Stein's Symptom in Diagnosis of Labyrinthine Suppuration. W. P. Eagleton, Newark.
114 Diagnosis of Purulent Inflammation of Labyrinth. Indications for Opening a Purulently Affected Labyrinth. V. Hinsberg, Breslau.
115 Ocular and Orbital Symptoms in Diseases of the Sphenoidal Cavity. H. Schroeder, Erlangen.

Journal of the New Mexico Medical Society, Albuquerque.

June 15.

116 Relation of Christian Science to the Practice of Medicine. S. A. Milliken, Silver City, N. M.
117 The General Practitioner in Prevention of Tuberculosis. C. W. Taylor-Goodman, Albuquerque.

Buffalo Medical Journal.

June.

118 Obstruction of the Intestine. M. Clinton, Buffalo.
119 Achylia Gastrica. I. H. Levy, Syracuse.
120 Conservatism in Modern Therapeutics. M. E. Gregg, Elbridge, N.Y.
121 Case of Pancreatic Cyst. W. D. Johnson, Batavia, N. Y.
122 Case of Monocular Hysterical Amblyopia. D. B. St. J. Roosa, New York.

Annals of Gynecology and Pediatry, Boston.

June.

123 The Obstetric Forceps. J. B. Cooke, New York.

American Practitioner and News, Louisville, Ky.

June.

124 Effects of High Arterial Tension on Tissues of the Eye. W. Cheatham, Louisville.
125 Importance of Medical Research to the Practice of Medicine. J. A. Flexner, Louisville.

American Journal of Urology, New York.

June.

126 Treatment of Infectious Pyelonephritides. H. Juv. Paris, France.
127 Cases of Voluminous Renal Calculi. A. Pérard, Paris.
128 Case of Sarcoma of the Bladder. G. S. Whiteside, Portland, Ore.

Journal of the Michigan State Medical Society, Detroit.

June.

129 *The Uplands in Medicine. C. B. Stockwell, Port Huron.
130 Ventilation of School Buildings. T. S. Ainge, Lansing.
131 Treatment of Cancer. W. T. Dodge, Big Rapids.
132 Case of Endothelioma of Breast. C. E. Simpson, Detroit.
133 Importance of Complete Extirpation in Tonsil Operations. E. T. Morden, Adrian.
134 Summer Diarrhea. J. M. Sattler, Manistique.

129.—See abstract in THE JOURNAL, July 6, 1907, page 71.

St. Louis Courier of Medicine.

June.

135 Kidney Congenitally Located in Pelvis. B. Robinson, Chicago.
136 Municipal Control of Measles. J. Zahorsky, St. Louis.
137 Surgery of Tuberculous Peritonitis. E. A. Babler, St. Louis.
138 Roentgen Ray in Practice. H. N. Chapman, St. Louis.
139 Sudden Death in Diphtheria. A. S. Bleyer, St. Louis.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal, London.

July 13.

1 *Simulation of Malignant Disease by Chronic Inflammatory Affections of the Sigmoid Flexure. K. W. Monsarrat.
2 *Diagnosis and Treatment of Appendicitis. W. H. B. Brook.
3 *Acute Appendicitis. A. H. Burgess.
4 *Treatment of Complications and Sequelæ of Gastric and Duodenal Ulcers. J. L. Thomas.
5 *Nephrectomy. G. Barling.
6 Case of Pyonephrosis Containing Typhoid Bacilli in Pure Culture. F. L. A. Greaves.
7 Suprapubic Litholapaxy. R. Heard.
8 *Suppurating Vaginal Cysts. J. B. Hellier.
9 *Spreading Peritonitis Cured by Drainage of the Pelvis, Fowler Position and Rectal Instillation of Saline Solution. C. H. Whiteford.
10 Life Cycle of Species of Herpetomonas Found in Culex Pipiens. W. S. Patton.
11 Duty of Restoring Hearing by Operation in Chronic Aural Suppuration. C. J. Heath.
12 Gumma of the Ciliary Body. G. V. Miller.
13 Calcium Chlorid in Hemorrhage. A. C. Lambert.
14 *Treatment of Ménière's Disease and Ménière's Symptoms by Seaton. T. W. Parry.

1. **Chronic Inflammatory Affections of Sigmoid.**—Monsarrat reports two cases. In the first case the symptom suggested a carcinoma of the sigmoid flexure, and acting on this basis, operation was advised. A large mass was removed and on examining it Monsarrat found that there was no malignant growth at all, simply a perisigmoiditis, which gave rise to a considerable exudation and the building up of scar tissue to an extent sufficient to give the physical findings of a tumor. The second patient also presented signs and symptoms suggestive of malignant disease of the sigmoid, but the diagnosis was reserved because of the length and cylindrical shape of the swelling. However, operation was advised, and on opening the abdomen the whole length of a rather short sigmoid loop was found converted into a rigid walled tube and bound down to the parietal peritoneum of the left iliac fossa by old standing adhesions.

2. **Appendicitis.**—That the majority of patients with appendicitis will get over the attack if treated on simple medicinal lines is claimed by Brook, but he advises removal of the appendix during the quiet period. If any sign of fulmination appears during the attack, operation should be done at once. If there is suppuration, and all is going otherwise satisfactorily, Brook defers operation until after the fifth day, care being taken not to open the general peritoneal cavity. If the appendix presents in the wound, it should be removed, but no elaborate search should be made for it. In general suppurative peritonitis Brook resorts to drainage, massive infusions and calomel.

3. **Id.**—Burgess advises early removal of the infected appendix. He reports 47 cases, with a mortality of 8.5 per cent. This, he thinks, is unquestionably the result of the operation being delayed too long. Only 4 deaths occurred, 2 in abscess cases and 2 in general peritonitis.

4. **Gastric and Duodenal Ulcer.**—Thomas discusses immediate treatment of perforation of gastric and duodenal ulcers. In ordinary cases he thinks the proper treatment should be the following: 1. Placing the patient in the horizontal position. 2. The administration of morphin in sufficient doses to relieve pain and to check peristalsis. 3. The avoidance of palpation and manipulation of the abdomen. 4. The emptying of the stomach by means of a stomach pump. Ordinary siphonage is unsatisfactory, because the solid contents of the stomach can not thus be satisfactorily removed. 5. No food nor drink to be given by the mouth. 6. The abdomen should be covered with several inches' thickness of absorbent cotton and bandaged. 7. Water and food to be given by the rectum only.

5. **Nephrectomy.**—Barling always goes into the loin when he wishes to remove a kidney. He ties the constituents of the pedicle separately. He has never attempted partial nephrectomy, nor has he performed nephrectomy for injury of the kidney. He has done the operation 39 times, with one death, a case of pyonephrosis and perinephritic suppuration. In 2 cases the nephrectomy was done for hypernephroma. Ten of the patients can not be traced. Of the remaining 29, 28 are alive and well.

8. **Suppurating Vaginal Cysts.**—Hellier reports two cases in which he thinks the cysts were derived from Gaertner's duct. There was no history of gonorrhea in either case.

9. **Peritonitis.**—In the case reported by Whiteford there was involvement of the peritoneum below the level of the transverse colon. The transverse colon was enormously distended by flatus and required puncture and suture in two places before it could be replaced. A rubber drainage tube was passed to the bottom of the pelvis through a suprapubic incision. No effort was made to wash or swab out the turbid fluid. Continuous rectal instillation of warm saline solution was begun immediately after the operation and was continued for three days. The patient was kept in the Fowler position all the time. The cause of the suppuration was thought to be an infected appendix, ovarian cyst or Fallopian tube.

14. **Treatment of Ménière's Disease by Seton.**—Parry inserts the seton in the nape of the neck on that side on which the ear trouble is most pronounced. Pinching up a good fold of skin, he passes a sharp knife through it in such a way that the entrance and exit incisions lie from one and a half to two inches apart after the fold has been freed. These incisions are best made in a slanting direction, so that what discharge may form will tend to gravitate to the lower one. The knife is kept in position (passed from the lower to upper incision) until one has inserted into the upper incision a sterilized bodkin, threaded with a piece of sterilized tape, about three-fourths inch broad and about 20 inches long. As the knife is withdrawn through the lower incision the bodkin follows it

from the direction of the upper incision, and thus the seton is passed. Parry uses a long piece of tape, as the old practice of pulling the same piece of material from side to side each day does not commend itself to him in that it is both dirty and unsurgical. He pulls a fresh piece of tape through each day and cuts off the old portion that has lain in the wound during the previous twenty-four hours. The long end is bunched up in a small pocket made of boracic gauze (about the same size and shape as the chamois-leather watch pockets provided by jewelers) with a small flap, so as to keep the unused tape sterile. When the long piece is coming to an end Parry stitches on a fresh piece, and so on. The gauze pocket should be placed above the higher incision, so that it may not become contaminated by discharge. Each day the wounds should receive an antiseptic wash and be covered afresh with a long pad of boracic gauze. There is then no fear of sepsis, and the patient may wear the seton for six months practically without any pain or discomfort. Nitrous oxid should be administered during the passing of the seton, and in quick hands the little operation is said to take only a few seconds.

The Lancet, London.

July 13.

15 Plague. W. J. R. Simpson.
16 *Significance of the Most Frequent Hernia in Childhood. E. M. Corner.
17 *Treatment of Lupus. Dr. Dreuw.
18 Acute Lead Encephalopathy Following Use of Diachylon Pills as Abortifacient. H. F. Warner.
19 *New Method for Using Roentgen Rays. A. H. Pirie.
20 *Prophylactic Use of Antitoxin in Epidemic Diphtheria. E. E. Norton.
21 *New Fluid for Hematocytometer. A. Edington.
22 Bread as Source of Uric Acid. R. Saundby.
23 *Symptoms and Treatment of Hay Fever. J. A. W. Pereira.
24 Case of Appendix in Femoral Hernia. F. C. Doble.

16.—See abstract in THE JOURNAL, July 20, 1907, page 280.

17. **Treatment of Lupus.**—The treatment employed by Dreuw consists in thorough surface cauterization, from two to four times, every four or six weeks, of areas previously frozen by means of ethyl chlorid, or by carbonic acid gas if a deeper effect is desired. Over this frozen surface crude hydrochloric acid is rubbed thoroughly and with a certain degree of force. Dreuw claims for this method cheapness, simplicity, ease of appplication and good cosmetic results. It can be applied in all forms of lupus and in all situations, with the exception, perhaps, of the eye. It is said to be an excellent preliminary treatment for later Finsen treatment.

19. **New Method for Using Roentgen Ray.**—Pirie describes a device invented by him for the purpose of measuring the dose of the Roentgen ray. It is called the quantimeter and enables the operator to accomplish in an hour what formerly took four hours.

20. **Prophylaxis in Diphtheria.**—Norton discusses an epidemic of diphtheria which occurred in a school in which the arrest of the spread of the epidemic is attributed to the prophylactic use of antitoxin. The dose was 500 units and about 180 children were injected.

21. **New Fluid for Hematocytometer.**—The solution employed by Edington has the following composition: Neutral citrate of sodium, 7.5 grams; formalin, 2 c.c.; dahlia (Grueb-ler), 0.03 gram; chloroform, 5 drops, and distilled water, 250 c.c. After standing two or three days the solution is filtered.

23. **Hay Fever.**—Pereira maintains that hay fever begins as a hyperemia of the conjunctiva and that the other symptoms are mostly reflex. He associates hay fever with pterygium, and claims that sufferers from pterygium are invariably great sufferers from hay fever. He advises that sufferers from hay fever wear colorless glasses, and that the eye condition is the one to be treated.

The Practitioner, London.

July.

25 *Diabetes Mellitus from the Physiologic Standpoint. W. D. Halliburton.
26 *The Pancreas and Diabetes Mellitus. J. R. Bradford.
27 *Basis of Therapy in Diabetes. I. W. Hall.
28 *Diet in Diabetes. M. Labbé.
29 *The Heart in Relation to Diabetes. L. Brunton.
30 Carlsbad Treatment of Diabetes and Glycosuria. F. Kraus.
31 Nervous Symptoms Associated with Glycosuria. J. Taylor.
32 *Skin Disease Associated with Diabetes. M. Morris.
33 Ocular Complications in Diabetes Mellitus. W. H. H. Jessop.
34 Pulmonary Complications of Diabetes. J. J. Perkins.
35 Diabetes and Insanity. T. B. Hyslop.
36 Diabetic Gangrene. C. Wallace.
37 *Diabetes in Children. H. M. Fletcher.
38 Urine in Diabetes. A. P. Beddard.
39 Clinical Significance and Treatment of Acetonuria. W. L. Brown.
40 *Testing for Sugar in Urine. W. G. Smith.
41 Gouty Glycosuria. A. W. Sikes.
42 *Treatment of Diabetes Mellitus and Chronic Glycosuria. R. T. Williamson.
43 Treatment of Diabetes Mellitus by Drugs. A. R. Parsons.
44 Glycosuria and Life Insurance. B. Dawson.

25. **Diabetes Mellitus.**—Halliburton agrees with those who claim that the term diabetes mellitus includes many pathologic conditions, which all possess, in common, the symptom of excess of sugar in the blood, and therefore in the urine. He gives an outline of the subject from the physiologist's point of view.

26. **Pancreas and Diabetes.**—Bradford discusses the diseases of the pancreas as a cause of diabetes. Three cases are reported. Two of them present many points of similarity, and suggest the view that some pancreatic lesion, such as chronic pancreatitis, gave rise to signs suggesting the presence of a malignant growth, and the subsequent disappearance of the tumors was accompanied by the development of very severe diabetes. The third patient apparently suffered from an attack of so-called catarrhal jaundice. When the jaundice subsided diabetes of a very severe type suddenly developed. Bradford suggests that, perhaps, an inflammatory swelling of the head of the pancreas was responsible for the jaundice and the diabetes.

27. **Basis of Therapy in Diabetes.**—Hall atempts to show that the main object in the management of diabetes is to raise the carbohydrate capacities of the tissue cells by the use of conditions which increase the utilization of the fed carbohydrates, diminish the amount of unused sugar and decrease the acetonuria and the acidosis. He reviews the work of von Noorden, Naunyn and others.

28. **Diet in Diabetes.**—Labbé discusses this subject with reference to two varieties of diabetes: 1. Cases associated with loss of nutrition. 2. Cases in which there is no loss of nutrition. The dietary he prescribes consists of four parts: 1, The fundamental carbohydrate; 2, the accessory carbohydrates; 3, the albuminous, fatty and alcoholic foods; 4, the forbidden foods. He urges that each must be prescribed by weight and never left to the patient's caprice. He says that the diet, which has a powerful and positively curative effect on diabetes without loss of nutrition, is most frequently ineffective in cases of diabetes in which there is loss of nutrition.

29. **The Heart in Diabetes.**—Brunton says that in young diabetics there is a tendency to malnutrition of the cardiac muscle and the cardiac nerves, leading to functional disturbance and possibly to sudden death. There seems also to be a tendency to the appearance of atheromatous change in the vessels generally and in the coronary arteries especially, leading fatty degeneration, feebleness of the heart, and angina pectoris. He insists on the administration of calcium phosphate or lactophosphate in any case of tachycardia, palpitation or cardiac weakness and dilatation occurring in patients with diabetes uncomplicated by gout. In such cases a proteid diet with a minimum of carbohydrates is indicated. Brunton says that while digitalis is useful in a case of diabetes without gouty complications, it must be used with great care in cases of gouty glycosuria. In such cases the tendency of digitalis and strophanthus still further to increase the tension should be counteracted by the administration at the same time of nitrite of soda. He thinks that the combination of salicylate of soda, or some of the other salicyl derivatives, with codein is sometimes serviceable.

32. **Skin Diseases and Diabetes.**—Morris emphasizes the importance of treating the underlying constitutional state. Locally, daily alkaline baths are said to be particularly useful. Weak solutions of permanganate of potash or sodium borate should also be applied several times a day, and the parts should be powdered with some soothing powder, such as bismuth, or oxid of zinc, and contiguous surfaces should be kept apart with muslin bags. When the acute symptoms have subsided Morris applies a weak resorcin ointment. Ulcerated surfaces and gangrenous conditions must be dealt with in the usual manner.

37. **Diabetes in Children.**—Fletcher gives a short account of the clinical features of diabetes mellitus, occurring in children. The treatment, he says, differs in no essential details from that to be followed in the case of adults. If the urine does not give the iron reaction, the carbohydrates may be gradually reduced, but if the reaction is present the greatest care should be exercised in their reduction. The onset of the reaction, or of drowsiness, should be met with an addition of carbohydrates to the diet. Fletcher declares that in the case of the child a strictly carbohydrate free diet can rarely, if ever, be adopted, without bringing about an increase in the acetone and aceto-acetic acid reaction, and a greater liability to coma.

40. **Testing for Sugar in Diabetes.**—If any doubt or difficulty arises as to the result of the copper test, Smith advises recourse to the bismuth test of Boettger.

42. **Drugs in Diabetes.**—Williamson insists that before beginning the treatment of any case of diabetes with drugs it is important to determine the form of the disease, and to make a very careful examination for various complications. If a moderately restricted diet causes the sugar excretion to cease, no drug treatment is required. But in the other cases in which the sugar excretion can not be arrested by diet, or can only be arrested by a most rigid diet, which the patient finds it difficult to tolerate for a lengthened period, drug treatment is desirable.

Annals of Tropical Medicine and Parasitology, Liverpool.

June.

45 Automatic Oiler for the Destruction and Prevention of Mosquito Larvæ in Cesspools and Other Collections of Water. E. H. Ross and H. C. Ross.
46 Anatomy of the Proboscis of Biting Flies. J. W. W. Stephens and R. Newstead.
47 Trypanosome Traumission Experiments. J. E. Dutton, J. L. Todd and J. W. B. Hanington.
48 Cattle Trypanosomiasis in the Congo Free State. J. E. Dutton, J. L. Todd and A. Kinghorn.
49 Treatment of Experimental Trypanosomiasis. B. Moore, M. Nierenstein and J. L. Todd.

Bulletin de l'Académie de Médecine, Paris.

50 (Year LXXI, No. 23, pp. 695-716.) *Treatment of Syphilis with Sodium Anilin-Arsenate according to Salmon's Technic. (Traitement de la syphilis, etc.) H. Hallopeau.

50. **Treatment of Syphilis with Sodium Anilin-Arsenate.**—Hallopeau reports the results of the use of this drug in 120 cases of syphilis, his conclusions being that it has a powerful action on the infectious agent. He protests against its common name "atoxyl," as this is purely a fancy name and conveys an erroneous impression, as the drug is toxic to a high degree. In his experience with syphilis, secondary associated infections seemed to be uninfluenced by the drug, as well as what he calls the syphilitic deuteropathies. If the injections could be continued long enough, he says, there is no doubt that the disease might be cured, but this is not possible in practice owing to the symptoms of intolerance which are observed after a variable number of injections. The signs of intolerance include gastrointestinal pain, nausea, vomiting, general malaise, painful sensations in the limbs, dysuria, fainting and chilliness. These symptoms are generally mild and transient, but sometimes they are severe and distressing. They can be avoided by restricting the number of injections and using very small doses after the first two injections, lengthening the intervals and suspending the injections at the first sign of abnormal sensations. Small persons, the aged and those with organic affections are predisposed to these disturbances and should be given smaller dosage. The drug has a cumulative action so that the effect can be kept up even when the dose is reduced and the intervals lengthened. It seems to be probable, he states, that in the organism the drug splits up at the end of a certain time into toxic products; this seems to be the only explanation possible for the abrupt onset of signs of intolerance without any premonitory symptoms. The greater or less rapidity and extent of this splitting up into toxic products explains the difference in the tolerance observed in different patients. He declares that a more stable compound should be sought for. The drug is soon eliminated from the body; not a trace can be found in the urine by the end of two weeks. Salmon believes that the course of treatment can then be commenced anew. Further experience will show whether there is danger of chronic arsenic intoxication or whether immunity might not be obtained, like that of the arsenic eaters. He discusses the part played by the anilin and that of the arsenic in the origin of these accidents, suggesting that the drug should be given a trial in combination with mercury and iodid and also in local injections. The experiences of Metchnikoff and Salmon indicate that this drug administered to monkeys, after contact infection, aborted the disease.

Presse Médicale, Paris.

51 (XV, Nos. 35-38, pp. 281-312.) *Intestinal Occlusion by the Foramen of Winslow. (Occlusion intestinale par le hiatus de Winslow.) P. S. R. Branca.
52 Pathogenesis of Orthostatic Albuminuria. (Albuminurie orthostatique.) A. Chalier.
53 Instrumentation for Thermocauterization. (Cautérization ignée.) Concluded. P. Desfosses and A. Martinet.
54 Valuable Therapeutic Properties of Small-Grained Electric Colloid Metals. (Métaux colloïdes électriques à petits grains.) H. Iscovesco.
55 Structure of the Nerve Cell during its different Functional States. (Struct. de la cellule nerv.) A. Pollcard.
56 Present Status of Spinal Anesthesia with Stovain. (Rachistovainisation.) L. Kendirdjy.

51. **Intestinal Occlusion by Foramen of Winslow.**—Branca shows the varying anatomic conditions and modes of intestinal occlusion at this point, in twenty illustrations, and advises access by loosening the descending portion of the duodenum. The route between the portal vein and the bile duct, advocated by certain writers, he asserts, is far more difficult and dangerous.

Archiv f. klinische Chirurgie, Berlin.

57 (LXXXII, No. 2, pp. 281-614.) Vaginal Process of the Peritoneum and Origin of Interparietal Inguinal Hernia. (Proc. Vag. Perit. und Leistenbrüche.) S. Cohn.
58 Bacterial Appendicitis, especially Streptococcal. (App.) E. Haim.
59 Pathologic Anatomy of Multilocular Echinococcus Cyst. (Ech.) K. Elenevsky.
60 Aseptic Suture of the Intestines. (Darmnaht.) M. I. Rostowzew.
61 Fistula between gall-bladder and bronchus; Recovery after Laparotomy. (Gallen-Bronchus-Fistel.) O. Klauber.
62 Diagnosis and Treatment of Congenital Enlargement of the Colon. (Hirschsprungsche Krankheit.) F. Neugebauer.
63 Amputation of Thigh by Gritti Technic. (Amp. des Oberschenkels.) A. Bloch.
64 Treatment of Uncomplicated Fractures of the Malleolus and late Results of Treatment. (Malleolarfract.) E. Bibergeil.
65 Plastic Operation on Esophagus. (Oesoph-Plastik.) W. Rokitzky.
66 Regeneration of Gall Bladder after Partial Removal. (Gallenblase nach partielle Cholecystektomie.) von Stubenrauch.

Beiträge zur klinischen Chirurgie, von Bruns', Tübingen.

67 (LI, No. 3, Pp. 503-782.) Dissecting Osteochondritis and Free Bodies in Joints. (Ost. dissecans und Gelenkmäuse.) Lindenstein.
68 *Abdominal Injuries. (Bauchverletzungen.) W. Hagen.
69 *Jejunostomy. (Jejunostomie.) A. Loyal.
70 *Ideal Cholecystectomy. (Zur Frage der id. Chol.) O. Thorspecken.
71 Superficial Lymphangioma, especially the Cystic Form, in the Neck. (Oberflächliche L. mit bes. Berücks. der cyst. Formen des Halses.) Paetzold.
72 *Absorption by the Peritoneum and its Importance in Bacterial Peritonitis. (Perit. Resorption.) A. Peizer.
73 *Affections of Abdominal Cavity due to Ascarides. (Askaridener Krankungen.) E. Sehrt.
74 *Hemorrhages from Uterine Adnexa. (Blutungen aus den Adnexen.) W. Noetzel.
75 Absorption of Bacteria by way of Lymph and Blood and Rôle of Lymph Glands. (Bakt.-Resorption auf dem Lymph- und Blut-Wege.) Id.

68. **Injuries of the Abdomen.**—Hagen reports about 100 cases of abdominal injuries observed in Göschel's service at Nuremberg. The outcome was much better in the cases with stab or shot wounds or other open injuries of the abdomen than in cases without an external wound, as operative treatment was always undertaken more promptly. This arrests the diffusion of infectious agents through the abdominal cavity much earlier than in case of contusions in which the uncertainty of the diagnosis leads to more expectant treatment. The total mortality was 49 per cent. of 94 cases. In 45 cases in which some viscus was injured subcutaneously the mortality was 68 per cent., while it was only 54 per cent. in the 26 open injuries of abdominal organs. None of the 8 patients with isolated injury of the kidneys died, but 27 died out of the 37 with injury of the stomach or intestines, or both. About 80 pages are devoted to the article, which concludes with an extensive bibliography.

69. **Jejunostomy.**—Loyal reports the details of 25 operations in which jejunostomy was done by Garré at Königsberg. The operations were for cancer in 20 cases, and for ulcer or its complications in the others. One patient succumbed to hemorrhage from a hemorrhagic ulcer, another to peritonitic compli-

cations of a very large cancer, another to marasmus from carcinomatous peritonitis with ascites, and another with cancer to pulmonary embolism—a total mortality of 4 out of 25 cases. The most rapid technic is always chosen, the Witzel fistula, with special care to insure favorable mechanical conditions for the outflow, the opening into the intestine being made as low down as possible. The fistula answered its purpose perfectly and healed after withdrawal of the catheter without complications. In a few cases there was considerable atony of the stomach afterward, but this disappeared at once after pumping out the stomach.

70. **Cholecystectomy.**—Thorspecken states that the gallstone affection was completely cured in twenty-six out of twenty-nine cases by this operation, but three others presented evidences of recurrence. Surgery is an empirical science, he remarks, and if experience shows that better results are obtained by operation, then the theoretical benefits of drainage should be disregarded. The choice of cases in which to operate is the main point, the failures in his experience being always in the cases with strong indications for drainage. Cholecystectomy is indicated only when it is possible to exclude the presence of a stone in the common bile duct, and only when the composition of the concrements in the gall bladder or cystic duct render it improbable that any can be overlooked, as might occur in case of numerous small stones or gravel. In these cases it is necessary to slit the common duct and to drain the hepatic. It is also generally necessary to drain in case of considerable infection of the biliary passages, even although it is scarcely possible to avoid local peritonitic processes by so doing. Even these restrictions leave a large number of cases in which the simpler method can be applied with the best results. The number will increase when the indications for cholecystectomy are enlarged at the expense of cholecystostomy, which the Heidelberg experience, as well as Kehr's, shows will be a gain in every way.

72. **Peritoneal Absorption.**—Peiser has continued his experimental studies on absorption by the peritoneum and reiterates his former distinction between acute and chronic absorption. By this he means that after the first phase of acute absorption the peritoneum seems to regulate the amount absorbed, not allowing so much to pass as before, this second phase of inhibited or chronic absorption seeming to parallel the elimination through the kidneys. The more promptly the acute phase passes into the chronic phase, the better the prognosis. The text-books teach that a disturbance in peritoneal absorption favors the development of peritonitis, but his experimental work speaks directly against this idea. The toxins contained in the bodies of the bacteria are set free by bacteriolysis, and when enough of these toxins has been absorbed to reach the fatal dose then the animal succumbs. Rapid, extensive bacteriolysis is, therefore, liable to prove injurious unless the bacteria can be removed and these endotoxins drained away. This suggests the possible benefits of a combination of serum treatment and prompt surgical intervention, with drainage.

73. **Abdominal Affections Due to Ascarides.**—Sehrt's patient was a woman of 49, who was operated on for supposed cancer of the stomach, but the organ was found sound and the trouble was traced to a large tumor in the lesser omentum. The surfaces of the liver and of the tumor were studded with numbers of miliary nodules. Large numbers of eggs of the ascaris were found in the necrotic masses in the tumor and in the nodules. A female had probably made its way to this point and died after depositing its eggs. Both the worm and its eggs had become encapsulated in time after a local inflammatory process. Each egg was found in the center of a large giant cell. The eggs in the pus were still viable.

74. **Hemorrhages from the Uterine Adnexa into the Abdominal Cavity.**—Noetzel reports 30 cases and urges immediate laparotomy, with scrupulous removal of all the blood and relics of old hemorrhage. Since losing one of the patients from peritonitis, he always drains for twenty-four hours. The pelvis is lowered at the close of the laparotomy and the abdominal cavity thoroughly rinsed out with salt solution. It must be borne in mind that the patient after such loss of blood is peculiarly non-resistant to infection. The latter is more to be feared than the hemorrhage.

Correspondenz-Blatt f. Schweizer Aerzte, Basle.

76 (XXXV, Nos. 21-22, pp. 665-728.) Buttermilk in Infantile Gastrointestinal Affections. (Buttermilch zur Ernährung magendarmkranker Säuglinge.) M. Stooss.
77 Automatic Apparatus for Permanent Extension of Fractures. (Permanentextension von Knochenbrüchen.) H. Zuppinger.
78 *Treatment in Total Loss of Scalp. (Ueberhäutung und Wundbehandlung bei totaler Skalplerung des Kopfes.) E. Enz.
79 (Nos. 23-24, pp. 729-792.) Indications for use of the High Forceps, with special regard to Axis Traction. (Anlegung der hohen Zange.) T. Wyder.
80 Operative Treatment of Backward Displacement of the Uterus. (Op. Behandlung der Rückwartslagerungen der Gebärmutter.) S. Stocker.
81 Principles of Morphologic Examination of Blood. (Morph. Blutuntersuchungen.) H. Naegeli.
82 Internal Treatment of Streptomycoses with Formaldehyd. (Behandlung der Streptomykosen mit Formaldehyd.) Schwarzenbach.

78. **Total Loss of Scalp.**—Enz describes a case of complete loss of the scalp, including eyebrows; the hair was caught in the gear of a centrifugal cream separator. He also gives summaries of twenty-five similar cases which he has collected from the literature. The ultimate outcome is not known in two, but twenty patients were cured. The defect was covered with Thiersch flaps, and in the case reported the flaps healed so perfectly in place that there is no cicatricial retraction, although the defect extended to the back of the neck. The main points in treatment are to protect the flaps against pressure and the wound from infection. Attempts to apply flaps taken from the scalp proved only partially successful as only a few of the flaps—prepared according to the Wolfe-Krause technic—healed in place. The rest of the defect was covered with Thiersch flaps from the thighs, five different sittings being required for this Thiersch flap transplantation. The illustrations show an apparently normal bald head as the final outcome.

Deutsche medizinische Wochenschrift, Berlin and Leipsic.

83 (XXXIII, No. 22, pp. 873-912.) *Action of Sodium Anilin-Arsenate on Syphilis. (Wirkung des Atoxyls auf die Syph.) P. Uhlenhuth, E. Hoffmann and K. Roscher.
84 Giemsa Staining of Pale Spirochete in Section Specimens. (Färbung der Sp. pall. im Schnittpräparat nach Giemsa.) G. Schmorl.
85 Reflex or Disuse as Cause of Atrophy of Muscles. (Muskelatrophie.) P. Sudeck.
86 Bilateral Neuritis of Crural Nerve with Pentosuria. (Neuritis des N. cruralis bei Pentosurie.) Cassirer and Bamberger.
87 *Accidents with Murphy Button. (Anwendung des Murphyknopfes am Dickdarm.) K. Vogel.
88 *To Learn Technic of Symphysiotomy or Pubiotomy. (Wie soll man die Technik der Symph. oder Hebosteotomie lernen?) H. Sellheim.
89 Cure of Gonorrheal Affection of Lachrymal Sac by Intercurrent Erysipelas. (Tränensackblennorrhoe, etc.) H. Feilchenfeld.
90 External Eye Affections in relation to Nasal Affections. (Aeussere Augenerkrankungen in ihrer Beziehung zu Nasenleiden.) Commenced in No. 21. A. Gutmann.

83. **Action of Sodium Anilin-Arsenate in Syphilis.**—The experiments and clinical experience related indicate, Uhlenhuth and his coworkers assert, that this drug, given in sufficiently large doses, has an unmistakable action on the manifestations of syphilis, especially striking in the malignant forms. The drug does not influence the movements of the spirochetes in the test-tube, even in a 1 per cent. solution, but it seemed to banish the spirochetes from the blood completely in an infant with inherited syphilis, while no influence was apparent in another case of the kind. Six of the eleven syphilitics treated systematically with the drug exhibited symptoms of intoxication, loss of appetite and sleeplessness, accompanying severe colic-like pains or diarrhea, while one of the patients exhibited albuminuria, with casts and blood corpuscles in the urine. The return of these symptoms after resumption of the drug established its causal relation. See also abstract No. 50, page 527.

87. **To Avoid Mishaps with the Murphy Button.**—Vogel describes two cases in which the button was used after resection of a cancer in the sigmoid flexure. In each case the lumen became obstructed with a hard scybalum with resulting perforation of the bowel above. He warns against the use of the button at points where such hard masses are liable to be encountered.

88. **How to Learn Technic of Symphysiotomy and Pubiotomy.**—Sellheim advises practicing the pelvis-enlarging operations on the sheep, as the conditions approximate those in the human very closely. He prefers to operate just before the mother sheep has been hit on the head to benumb it before it

is slaughtered. He places the animal on a table in a position approximating conditions in the clinic and then performs the operation, the legs of the animal held by assistants. The various technics proposed can thus be practiced and compared, and conditions afterward examined as the animal is slaughtered. The findings are remarkably instructive, especially as it is a little more difficult to perform the operation on the sheep than on the human subject. The findings also show that the injury to the soft parts is more considerable than one would suppose from the accounts in the literature. They also reveal the dangers and means of avoiding injury of the bladder, urethra and peritoneum.

Deutsche Zeitschrift f. Chirurgie, Leipsic.

91 (LXXXVI, Nos. 2-4, pp. 117-390.) Dislocation in calcaneo-scaphoid Articulation. (Luxation im Talonaviculargelenke.) R. Morian.
92 Dislocation of Foot below Astragalus and Fractures of Latter: 2 Cases. (Luxatio pedis sub talo.) Luxembourg.
93 Isolated Subcutaneous Fractures of Certain Carpal Bones. (Frakt. einzelner Handwurzelknochen.) M. Hirsch.
94 *Catgut fresh from the Slaughtered Animal Treated with Iodin or Silver before being twisted. (Katgut, steril vom Schlachttier, etc.) F. Kuhn and M. Rössler (Kassel).
95 Dislocation of Foot below Astragalus. Mechanism. Reduction. (Luxatio pedis sub talo.) Reismann.
96 Inherited Congenital Anomaly of Finger Bones. (Anomalie des Fingerskelettes.) B. Bauer.
97 Incarceration of Mesentery of Small Intestine in Crevice in Great Omentum. (Einklemmung von Dünndarmgekrose.) H. Lorenz.
98 Fractures of Metacarpal Bones. (Frakt. der Metacarpalknochen.) E. Boerner.
99 *Resection of Chest Wall with Plastic Operation on Exposed Lung. (Plastik auf die freigelegte Lunge.) F. Sauerbruch.
100 Experimental Study of Spiral Fractures. (Spiralfrakt.) F. Kroh.
101 *Lymphangiectasia. (Lymphangiektasie.) P. Albrecht.
102 Echinococcus in the Neck. (Echin. am Halse.) J. P. Haberern.
103 Sarcoma of Female Breast. (Sarkom der weibl. Brust.) J Finsterer.
104 Fragmented Sesamoid Bones of Big Toe. (Teilung der Sesambeine.) Momburg.

94. **Fresh Catgut Impregnated with Iodin or Silver Before Twisting.**—Kuhn and Rössler devote nearly six pages to the bibliography of mishaps with catgut, and review all the methods of preparation, showing their defects. Many methods of preparing catgut give tolerably fair results, but none is absolutely reliable. They think that this is because the catgut gets so thoroughly impregnated with germs during its manufacture that the subsequent sterilization is unable to dislodge or to destroy them entirely. The sterilization should be done, they think, before the catgut is submitted to the final processes of manufacture, and they describe the method of preparation in use in their service which they believe gives results never before attained. The method is illustrated. The intestine is removed from the slaughtered animal by a person trained in asepsis, and is kept free from contamination while it is first cleansed, rinsed again and again, and sent to them in an antiseptic fluid. They believe that the intestine of a healthy herbivorous animal may be regarded as free from very virulent germs, tetanus, anthrax and virulent pyogenic cocci. It acquires them and filth when the gut is thrown on the floor of the slaughter-house, as is the general custom. When the intestine is received it is transferred with every precaution of asepsis to a rectangular glass pan. The end of the intestine is then drawn over a little horizontal plate of ivory, in front of which stands a perpendicular knife. The intestine is then pulled along over this plate, the knife slitting it in two, and each half falling and coiling in a separate glass pan on each side of the standard on which the knife is mounted. The slit halves are then manipulated to render them transparent and pliable by passing them over rollers at each end of a box in which several combs are mounted, alternately with the teeth up or down. By turning a crank at each end in turn the catgut is wound from one roller on the other and back again. Every step of the process is aseptic. After the catgut has the desired aspect it is disinfected and then impregnated thoroughly with iodin or silver, when it is ready to be twisted, and disinfected again before using. Ordinary catgut is twisted first and then disinfected. They agree with Paterno that silver fluorid possesses the most powerful disinfecting properties while it has certain advantages over other silver salts. This communication is to be followed by a report on the properties of catgut thus prepared, its absorption, strength and freedom from irritating properties.

99. **Resection of Chest Wall with Plastic Operation on Exposed Lung.**—This operation was rendered possible by the use of the compressed-air cabinet. The large defect left after removal of an adherent mammary cancer was repaired by twisting the sound breast over the defect and suturing it directly to the lung below. No tamponing was required in the two cases described and illustrated.

101. **Lymphangectasia.**—Albrecht relates a case in which chyle was apparently secreted from the swollen lymphatics on the thigh. Some of them ruptured. In structure they resembled a cavernous lymphangioma. Operative treatment is of no use in such cases, he asserts, although symptomatic measures are indicated. The trouble is evidently a congenital malformation in the lymphatic apparatus, the condition being aggravated by secondary inflammation. In the tropical form the filaria induces the inflammation without the necessity for a congenital predisposition.

Münchener medizinische Wochenschrift.

105 (LIV, No. 21, pp. 1017-1064.) *Reduction of Puerperal Mortality. (Zunehmende Kindbettsterblichkeit.) O. v. Herff.
106 *Present Status of the Streptococcus Question in Obstetrics. (Streptokokken-Frage.) W. Zangemeister.
107 Transference of Experimental Syphilis of Rabbit Eye to another Rabbit. (Augensyphilis des Kaninchens.) E. Tomasczewski.
108 *Clinical Test for Alexin. (Alexinprobe.) E. Moro.
109 When to Operate for Myoma. (Myom.) Weisswange.
110 *Dorsal Reflex. (Dorsaler Fussrückenreflex.) Lissmann.
111 *Use of Fluid Rubber to Protect Field of Operation. (Operationen unter Gaudaninhautschutz nach Döderlein.) A. Littauer.
112 Multiple Neurotic Cutaneous Gangrene in its Relations to Hypnosis. (Hautgangrän.) L. v. Szöllösy.
113 Hysteric Fever during Pregnancy and Pains Simulating Labor. (Seltenere Störungen der Schwangerschaft.) Krummacher.
114 Varicella assuming form of Pemphigus Neonatorum. (Pemph. neonat. non syphiliticus). Kaupe.
115 Steel Ribbon Spring for Flat Foot Insoles. (Stahlbandfeder für Plattfusseinlagen.) K. Lengfellner.
116 *Present Status of Percussion of Heart. (Lehre von der Perk. des Herzens.) Commenced in No. 20. G. Treupel.

105. **Increasing Puerperal Mortality.**—O. von Herff writes from Basle to comment on the increasing puerperal morbidity and mortality. He attributes it to defective disinfection of the hands and to overzeal in examining and operating. He commends Ahlfeld's technic of hot water-alcohol disinfection as simple and sure, and urges that the obstetric trauma should be reduced to the minimum with sriet avoidance of every intervention not actually indispensable. There is no necessity for training students in the refinements of gynecologic rarities, he adds; what they need is to be able to deliver the ordinary run of cases such as they will encounter in every-day practice

106. **Present Status of Streptococcus Serum Treatment.**—Zangemeister considers the subject mainly from the standpoint of obstetrics, his conclusion being that, to date, antistreptococcus serum has not proved reliable in the clinic for inducing either active or passive immunity. He thinks, however, that it is only a question of time when effective antistreptococcus sera will be produced which can be depended on for passive immunization and treatment.

108. **Test for Alexins.**—Moro uses for his test 0.1 c.c. of a 10 per cent. suspension of washed red corpuscles, from sheep, in physiologic salt solution. To this is added 0.05 c.c. of a 10 per cent. solution of sheep blood immune serum and 0.045 c.c. of human blood. With normal human blood the sheep red corpuscles are entirely or nearly entirely dissolved in the course of two hours of incubation. In case the human blood is lacking in alexins, more or less of the corpuscles escape destruction, and the proportion which thus escapes is the index of the proportion of alexin in the human blood. The corpuscles that have resisted hemolysis are dissolved in 0.1 c.c. of decinormal hydrochloric acid. The tint of the resulting fluid is then compared with that of the standard solution. The findings harmonized with those of other tests in 200 examinations made by him at Pfaundler's clinic.

110. **Dorsal Reflex.**—Mendel and Bechterew have called attention to an organic reflex in affections of the central motor system with increased nervous excitability. The latter styles it the "tarsophalangeal reflex." When the side of the dorsal surface of the foot, over the cuboid and external cuneiform bones, is lightly tapped with the hammer, the second to the

fifth toes or the second and third alone turn up toward the back of the foot. Lissmann reports that this occurred in 900 tests of healthy persons, without a single exception. The same was observed also in 41 patients in various stages of tabes, in 2 cases of paralysis agitans and in 8 of sciatica. On the other hand, no reflex contraction followed in the cases of spastic infantile paralysis, while a reverse flexion, a pathologic reflex contraction—the toes contracting toward the plantar surface of the foot—was observed in nearly every case of a nervous affection in which the Babinski sign was positive. Plantar flexion was never observed in cases with negative Babinski. In infants the plantar reflex was also observed so long as the Babinski sign was positive. In 10 out of 12 infants with negative Babinski sign the flexion of the toes was dorsal and dubious in the others. These findings suggest that the sign is connected with the pyramidal tracts, and it is thus liable to prove useful in the diagnosis of nervous affections of central origin.

111. **Rubber Film to Protect Field of Operation.**—Döderlein reported a short time ago that he had succeeded in effectually protecting the field of operation by applying a solution of rubber in benzine and formaldehyd. It dries rapidly and forms an impervious coating over the field of operation. The skin is first disinfected as usual and then painted with tincture of iodin; as soon as this has dried the rubber solution is applied. (Döderlein's communication on the subject was summarized in THE JOURNAL, xlviii, page 911, 1907.) Littauer has used the rubber solution in sixty laparotomies and has been much pleased with the results. Convalescence seemed to be hastened and shortened.

116. **Present Status of Percussion of Heart.**—Treupel thinks that extremely accurate information can be obtained in regard to the heart by combining the various methods of percussion: Ewald-Goldscheider's threshold percussion (SP.), Moritz's moderate percussion (MP), and touch percussion (Tasperkussion—TP). He gives the findings in 150 cases, tabulating also the orthodiagram, the maximal distance of the right margin of the heart from the median line (Mr), the maximal distance of the left margin of the heart from the median line (Ml), and the length of the heart, from the cava-auricle corner to the apex. He urges others to use these abbreviations for comparison of findings.

Virchow's Archiv, Berlin.

Last indexed page 95.

117 (CLXXXVIII, No. 2, pp. 181-394.) Parathyroid Glands, Aberrant Cells therefrom included in Thyroid Gland, and Remains of Postbranchial Body. (Glandula parath., etc.) S. Getzowa.

118 Case of Retroperitoneal Hernia. (Hernia retroperit. Treitzii.) H. Schöppler.

119 Study of Histomechanic Development of Skeleton and Interstitial Bone Growth. (Synostosis suturæ sagittalis cranii.) R. Thoma.

120 Tumors of Pituitary Body and that Region. (Geschwülste der Hypophysis und-Gegend.) L. Bregman and J. Steinhaus.

Gazzetta degli Ospedali, Milan.

Last indexed page 95.

121 (XXVIII, Nos. 21-27, pp. 209-288.) Influenza Bacillus in Blood and Spleen in Influenza. (Bacillo di Pfeiffer.) G. Ghedini.

122 *Epidemiologic Study of Typhoid. (Epidemia tifoide di abitazioni.) A. Galluzzi.

123 Study of the Blood in the Insane. (Ricerche ematologiche sugli alienati.) G. M. Fratini.

124 *Mosquito Traps. (Mezzo di distruzione delle zanzare malariche.) E. Bosurgi.

125 Spinal Anesthesia. (Anestesia del midollo spinale.) O. Marchesini.

126 *Steam Sterilization in Country Practice. (Sterilizzazione a vapore compresso.) A. De Cortes.

127 *Syphilis transmitted to the Third Generation. (Eredo-eredosifilide.) E. Imparati.

128 *Instrumental Dilatation in 3 Cases of Placenta Prævia. (Metodo Bossi.) E. Guasoni.

129 *Typhoid Bacillus in Blood during Convalescence. (Presenza del bac. di Eberth nel sangue.) C. Gennari.

130 *Autosiphonage in Lavage of the Stomach. (Nuovo metodo di gastrolisi.) L. della Valle.

122. **Epidemiologic Study of Typhoid.**—Galluzzi relates that sixty barrels of manure and garbage from a town were dumped from a train on a tract of land in the country from 180 to 300 feet to the windward of four farms sheltering thirty persons. The water supply of this group of farms was mainly from a spring in a hill on the other side, and could not have been contaminated from the garbage dumped on the low ground near the river. In less than two weeks twenty out of the thirty persons on the farms developed symptoms of typhoid. Galluzzi ascribes the infection to typhoid germs in the manure dump, liberated possibly by the gases of putrefaction, favored by the extremely hot weather, and transported to the farms by the strong winds prevailing at the time.

124. **Mosquito Traps.**—Bosurgi applies the principle of sticky fly paper to the destruction of malaria-bearing mosquitoes. A kind of screen or trellis work, about 6 feet by 4.5 feet, is smeared thick with heavy crude oil, which is sticky enough to catch and hold mosquitoes. They can be attracted to the screens by hanging a small lantern in the center. It is not necessary to put the screens out of doors until toward night. They should be raised about 4.5 feet from the ground, as a rule, but they can be placed on the ground close to the edge of waters where mosquitoes are breeding. The deodorized crude oil is not expensive and answers every purpose, as it takes a long time to dry.

126. **Steam Sterilization in Rural Districts.**—De Cortes advises a small portable steam sterilizer such as are used by specialists and shows how it can be adapted for the sterilization of everything the physician or surgeon may need in country practice.

127. **The Second Generation of Inherited Syphilis.**—Imparati reviews 22 cases on record in which syphilis reappeared in the grandchildren in a virulent form. There is no evidence of sterility in the families with inherited syphilis, as many as 15 pregnancies are recorded in some. Jullien has reported an average of 2.75 pregnancies in 93 families and Fournier 3.16 in 116 families, but only about 50 per cent. of the children survived the first year after birth, and only a very small number were free from signs of syphilis. The stigmata seem to be about the same for both the first and the second generation of inherited syphilis.

128. **Instrumental Dilatation in Case of Placenta Prævia.**—Guasoni reports three cases in which the advantages of rapid instrumental dilatation were conclusively shown. There was no laceration in any case, although craniotomy was required on account of hydrocephalus in one case.

129. **Typhoid Bacilli in Blood in Convalescence from Typhoid.**—Gennari states that with Conradi's ox-bile method he was able to detect typhoid bacilli in the blood in 8 cases, even one and two weeks after all fever had subsided.

130. **Autosiphonage in Lavage of Stomach.**—Della Valle introduces the stomach-sound and pours through it the fluid for lavage. The patient then changes his position until every part of the stomach has been thoroughly rinsed with the fluid. He is then told to draw a deep breath and then, holding the tube tightly closed between his lips, to make a profound expiration. This starts a siphonage action in the tube and the entire contents of the stomach are thus expelled.

Books Received

WARUM KOMMEN DIE KINDER in der Schule nicht vorwärts? Zwei Vorträge vor der Schulkommission des Aerztlichen Vereins in München von Der Albert Uffenheimer. Privatdozent für Kinderheilkunde in München und Dr. Otto Stählin, Professor am Agl. Maxgymnasium in München. Paper. Pp. 56. Price, 1.4 mk. Munich: Verlag der Aerztlichen Rundschau (Otto Gmelin), 1907.

A DICTIONARY OF MEDICAL DIAGNOSIS. A Treatise on the Signs and Symptoms Observed in Diseased Conditions. For the use of Medical Practitioners and Students. By Henry L. McKisack, M.D., etc., Physician to the Royal Victoria Hospital, Belfast. Cloth. Pp. 583. Price, $3.50. New York: William Wood & Co., 1907.

RATIONAL AND EFFECTIVE TREATMENT OF HIP DISEASE. By P. B. Bennie, M.A., M.D., etc., President Melbourne Medical Association, 1896. Founded on Experience of Numerous Cases in Hospital Practice During 28 Years. Compiled by A. B. Bennie, M.A., M.B., etc. Cloth. Pp. 108. New York: William Wood & Co., 1907.

THE ESSENTIAL SIMILARITY of Innocent and Malignant Tumors. A Study of Tumor Growth. By Charles W. Cathcart, M.A., M.B., etc., Surgeon Royal Infirmary, Edinburgh. Illustrated. Cloth. Pp. 79. Price, $2.50. New York: William Wood & Co., 1907.

COOK COUNTY HOSPITAL REPORTS. 1906. Compiled and Edited under the direction of the Publication Committee of the Cook County Hospital Attending Staff. Cloth. Pp. 304. Chicago: The Henry O. Shepard Co., 1906.

SEVENTH ANNUAL REPORT of the Eye, Ear, Nose and Throat Hospital of New Orleans, La. Jan. 1, 1906, to Dec. 31, 1906. Paper. Pp. 71. New Orleans: A. W. Hyatt Stat'y Mfg. Co., 1907.

TREATMENT. By Harry Campbell, M.D., B.S., etc., Physician to the Northwest London Hospital. Cloth. Pp. 421. Price, $3.00. New York: William Wood & Co., 1907.